99-C-98526/1-04

Brandeis University

Health Policy Research Consortium

PHYSICIAN CONSULTATIVE SERVICES UNDER MEDICARE:

Final Report

in cooperation with
Boston University
Center for Health Economics Research
Urban Institute

Administrative Offices at:
Heller Graduate School
Brandeis University
415 South Street
Waltham Massachusetts
02254-9110
(617) 736-3900

Health Policy Research Consortium

Heller Graduate School
Brandeis University
415 South Street
Waltham, Massachusetts
02254-9110

(617) 736-3900

PHYSICIAN CONSULTATIVE SERVICES UNDER MEDICARE:

Final Report

Submitted by:

Robert C. Boutwell, MD

Center for Health Economics Research
75 Second Avenue, Suite 100
Needham, MA 02194

November 1989

In cooperation with

Boston University
Center for
Health Economics Research
Urban Institute

This research was supported by Cooperative Agreement No. 99-C-98526/1-04 from the Health Care Financing Agency to the Brandeis university Health Policy Research Consortium.

1
for
lts

FOLLOW-UP CONSULTS BY CARRIER

Carrier Name	Number of Follow-up Consults	Actual Allowed Charges for Follow-up Consults	Estimated Total Allowed Charges for Follow-up Consults*
510 Alabama	1,761	$38,952	$779,039
1020 Alaska	81	$3,356	$67,116
1030 Arizona	227	$9,348	$186,968
520 Arkansas	220	$4,245	$84,890
542 California (Northern)	4,625	$151,782	$3,035,638
2050 California (Southern)	21,698	$1,108,336	$22,166,720
550 Colorado	514	$12,190	$243,791
10230 Connecticut	364	$11,073	$221,454
570 Delaware	1,254	$28,748	$574,958
590 Florida	12,775	$469,849	$9,396,981
13110 Georgia	1,542	$39,375	$787,498
1120 Hawaii	98	$3,817	$76,344
5130 Idaho	98	$1,826	$36,520
621 Illinois	4,546	$147,756	$2,955,116
630 Indiana	1,463	$29,542	$590,850
640 Iowa	556	$15,647	$312,931
740 Kansas City	500	$10,865	$217,291
650 Kansas (exc. Kansas City)	205	$3,957	$79,142
660 Kentucky	1,659	$41,466	$829,313
528 Louisiana	1,170	$28,978	$579,561
21200 Maine	444	$12,344	$246,882
690 Maryland	9431	$298,734	$5,974,686
700 Massachusetts	5,668	$227,856	$4,557,121
710 Michigan	61	$2,964	$59,280
10240 Minneapolis area	590	$14,675	$293,510
720 Minnesota (rural)	144	$4,258	$85,150
10250 Mississippi	1,901	$27,534	$550,677
11260 Missouri (exc. Kansas City)	2,194	$64,697	$1,293,943
751 Montana	81	$2,323	$46,451
645 Nebraska	137	$2,626	$52,512
1290 Nevada	78	$4,229	$84,588
780 New Hampshire	431	$10,166	$203,319
13310 New Jersey	4,185	$87,092	$1,741,831
1360 New Mexico	306	$6,669	$133,382
801 New York (upstate)	700	$16,509	$330,189
13340 North Carolina	3,243	$65,416	$1,308,320
820 North & South Dakota	277	$6,673	$133,452
16360 Ohio	3,777	$84,614	$1,692,278
1370 Oklahoma	636	$16,280	$325,600
1380 Oregon	540	$11,299	$225,986
865 Pennsylvania	20,475	$590,976	$11,819,528
973 Puerto Rico/Virgin Islands	616	$3,356	$67,116
10071 Railroad claims	1,807	$69,721	$1,394,413
870 Rhode Island	129	$2,925	$58,494
880 South Carolina	88	$1,757	$35,144
5440 Tennessee	1,635	$33,031	$660,614
900 Texas	6,044	$159,238	$3,184,754
910 Utah	450	$9,273	$185,462
10490 Virginia	975	$18,784	$375,677
930 Washington	283	$7,277	$145,545
580 Washington, D.C.	1,630	$52,856	$1,057,115
16510 West Virginia	1,085	$21,418	$428,353
5530 Wyoming	37	$656	$13,110
Totals	125,434	$4,099,330	$81,986,601

---

*Actual allowed charges for 5% sample, multiplied by twenty.

Source: 1986 Merged MedPAR and BMAD 5% Beneficiary Files.

Health Policy Center

Heller Graduate School
Brandeis University
415 South Street
Waltham, Massachusetts
02254-9110

617-736-3900

Stanley S. Wallack, Director

hpc

November 3, 1989

Sherry Terell, Ph.D.
Office of Research
Health Care Financing Agency
Oak Meadows Building, Area 2-B-14
6340 Security Boulevard
Baltimore, MD 21207

Dear Sherry,

Enclosed are three copies of the Final Report entitled, Physician Consultative Services Under Medicare, prepared under HCFA Cooperative Agreement No. 99-C-98526/1-04 through the Health Policy Research Consortium - Cooperative Research Center. A draft version of the first seven chapters of this report was sent to Terry Kay in April 1989. A draft of the final chapter was sent to Terry in September, and we received his comments two weeks ago. We are forwarding the final report to you, since Terry will have assumed his new responsibilities by the time this report reaches HCFA.

Chapter 3.5 of our report states that all Medicare carriers had paid claims for follow-up consultations, although a study by the Office of the Inspector General asserted that five carriers did not allow the use of follow-up consultation codes. Terry had asked us to supply more information regarding the use of follow-up consultation codes. Since the OIG report did not identify the five carriers, the best that we can do is supply you with a table showing all carriers, together with the number of follow-up consultation claims allowed by each carrier in our 5 percent 1986 sample, the actual allowed charges for these claims, and an estimate of the total allowed charges for each carrier (i.e., the sample allowed charge multiplied by twenty).

Please contact me if you have any questions about this report.

Sincerely,

R. Boutwell

Robert C. Boutwell, M.D.
Senior Analyst

Enclosures

RCB/pwt

50272-101

REPORT DOCUMENTATION PAGE	**1. REPORT NO.**	**2.**	**3. Recipient's Accession No.** PB90-135708

4. Title and Subtitle

Physician Consultative Services Under
Medicare

5. Report Date
November 1989

6.

7. Author(s)
Robert C. Boutwell, M.D.

8. Performing Organization Rept. No.
2218H/43H

9. Performing Organization Name and Address

Brandeis University
Health Policy Research Consortium
415 South Street
Waltham, Massachusetts 02254-9110

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G) 99-C-98526/1-04

12. Sponsoring Organization Name and Address

Health Care Financing Administration
Office of Research and Demonstrations, OR, DRES, NISB
6325 Security Boulevard, 2-B-14 Oak Meadows Bldg.
Baltimore, Maryland 21207

13. Type of Report & Period Covered
Final Report

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This study examined a 5 percent sample of Medicare Part A and Part B claims for 1986 and looked at the distribution of all physician consults by location, carrier, specialty, and procedure code. In order to examine the influence of patient, hospital, and DRG-specific characteristics on consult rates per discharge a more detailed analysis of inpatient consults for patients in seven DRGs, was also performed. Three-fourths of all consults are performed on inpatient services, the remainder are performed in physicians' offices. The distribution of location varies widely by carrier. Medicare recognizes almost 40 physician specialties, nearly one-half of all consults are performed by physicians in only three specialties: internists, cardiologists and neurologists. Over forty percent of consults, regardless of location, are billed at the initial comprehensive level. In an analysis of inpatient consults within several DRGs, the following patient and DRG-specific factors appeared to be related to an increased rate of consults per discharge: the presence of chronic renal failure; and being placed in a DRG distinguished by greater age and/or the presence of complications. Hospital characteristics related to increased consult rates were: designation as a teaching hospital; location in an urban area; and increasing SMA size. The data did not show any clear evidence of substitution of physician consults for visits.

17. Document Analysis a. Descriptors

Physician Consultative Services and Expenditures.

b. Identifiers/Open-Ended Terms

Medicare, Physician Consultative Services, Physician Consultations, Physician Services

c. COSATI Field/Group

18. Availability Statement: NTIS Release Unlimited	**19. Security Class (This Report)** Unclassified	**21. No. of Pages** 110
	20. Security Class (This Page) Unclassified	**22. Price**

(See ANSI-Z39.18)

See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION 1-1

1.1 Statement of the Problem 1-1
1.2 Definition of Physician Consultation 1-1
1.3 Executive Summary 1-4

2.0 DATA AND METHODS 2-1

2.1 Data Source and File Construction 2-1

3.0 GENERAL FINDINGS 3-1

3.1 Distribution of Consultations by Location 3-1
3.2 Correlations Between Consult Rates and Visit Rates by Carrier 3-1
3.3 Physician Consults By Specialty 3-5
3.4 Physician Consults by Prodedure Code 3-5
3.5 Carrier Differences in Use of Procedure Codes for Consults 3-9

4.0 ANALYSIS OF CONSULTS WITHIN THE ACUTE MYOCARDIAL INFARCTION DRGs 4-1

4.1 Description of Diseases in DRGs 121, 122, and 123 4-1
4.2 Distribution of Discharges in DRGs 121, 122, and 123 by Patient and Hospital Characteristics 4-2
4.3 Distribution of Physician Consults in DRGs 121, 122, and 123 by Patient and Hospital Characteristics 4-5
4.4 Distribution of Physician Consults and Visits by Geographic Region 4-5
4.5 Distribution of Physician Consults in DRGs 121, 122, and 123 by Inpatient Day 4-8
4.6 Distribution of Physician Consults in DRGs 121, 122, and 123 by Physician Specialty 4-8

5.0 ANALYSIS OF CONSULTS WITHIN THE PNEUMONIA DRGs 5-1

5.1 Description of Diseases in DRGs 89 and 90 5-1
5.2 Distribution of Discharges in DRGs 89 and 90 by Patient and Hospital Characteristics 5-2
5.3 Distribution of Physician Consults and Visits in DRGs 89 and 90 by Patient and Hospital Characteristics 5-4
5.4 Distribution of Physician Consults and Visits by Geographic Region 5-6
5.5 Distribution of Physician Consults in DRGs 89 and 90 by Inpatient Day 5-6
5.6 Distribution of Physician Consults in DRGs 89 and 90 by Physician Specialty 5-10

6.0 ANALYSIS OF CONSULTS AND VISITS WITH HIP/FEMUR PROCEDURE DRGs 6-1

6.1 Description of Diseases in DRGs 210 and 211 6-1
6.2 Distribution of Discharges in DRGs 210 and 211 by Patient and Hospital Characteristics 6-2
6.3 Distribution of Physician Consults and Visits in DRGs 210 and 211 by Patient and Hospital Characteristics 6-4
6.4 Distribution of Physician Consults and Visits by Geographic Region 6-6
6.5 Distribution of Physician Consults in DRGs 210 and 211 by Inpatient Day 6-6
6.6 Distribution of Physician Consults in DRGs 210 and 211 by Physician Specialty 6-10

TABLE OF CONTENTS (continued)

PAGE

7.0 EVIDENCE FOR SUBSTITUTION OF PHYSICIAN CONSULTS FOR VISITS 7-1

8.0 MULTIVARIATE ANALYSIS OF GEOGRAPHIC DIFFERENCES IN CONSULT RATES 8-1

8.1 Data Sources and File Construction 8-1
8.2 Analysis Technique 8-1
    8.2.1 Dependent Variable 8-1
    8.2.2 Independent Variables 8-2
8.3 Results 8-3
    8.3.1 Effect of Groups of Independent Variables 8-3
    8.3.2 Effect of Individual Independent Variables 8-10
8.4 Discussion 8-11

REFERENCES

APPENDIX A

TABLE OF TABLES AND FIGURES

PAGE

TABLE 2-1 PROCEDURE CODES FOR PHYSICIAN CONSULTATIONS 2-2

TABLE 2-2 PROCEDURE CODES FOR PHYSICIAN HOSPITAL VISITS 2-3

TABLE 2-3 DRGs INCLUDED IN DETAILED ANALYSIS OF INPATIENT CONSULTATIONS 2-5

TABLE 3-1 DISTRIBUTION OF CONSULTATIONS BY LOCATION 3-2

TABLE 3-2 CORRELATIONS BETWEEN CARRIER-BASED UTILIZATION RATES OF CONSULTS AND VISITS IN HOSPITALS AND PHYSICIAN OFFICES 3-4

TABLE 3-3 DISTRIBUTION OF CONSULTATIONS BY SPECIALTY (ALL LOCATIONS) 3-6

TABLE 3-4 DISTRIBUTION OF CONSULTS BY LOCATION AND SPECIALTY[a] 3-7

TABLE 3-5 DISTRIBUTIONS OF CONSULTATIONS BY LEVEL OF SERVICE (ALL LOCATIONS) 3-8

TABLE 4-1 CHARACTERISTICS OF PATIENTS IN DRGs 121, 122 and 123 (Circulatory Disorders with Acute MI) 4-3

TABLE 4-2 CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 121, 122, AND 123 (Circulatory Disorders with Acute MI) 4-6

TABLE 4-3 CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 121, 122, AND 123 4-7

TABLE 4-4 VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 121, 122, AND 123 4-9

FIGURE 4-1 CONSULTS PER PATIENT BY INPATIENT DAY AND BY DRG 4-10

TABLE 4-5 SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS FOR PATIENTS IN DRGs 121, 122, AND 123 (Circulating Disorders with Acute MI) 4-11

TABLE 4-6 CARDIOLOGY CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENTS IN DRGs 121, 122, AND 123 (Circulatory Disorders with Acute MI) 4-14

TABLE 5-1 CHARACTERISTICS OF PATIENTS IN DRGs 89 AND 90 5-3

TABLE 5-2 CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 89 AND 90 5-5

FIGURE 5-1 CONSULTS PER PATIENT BY INPATIENT DAY AND BY DRG 5-6

TABLE 5-3 CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 89 AND 90 5-7

TABLE 5-4 VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 89 AND 90 5-8

FIGURE 5-1 CONSULTS PER PATIENT BY INPATIENT DAY AND BY DRG FOR PATIENTS WITH SIMPLE PNEUMONIA AND PLEURISY 5-9

TABLE OF TABLES AND FIGURES (continued)

PAGE

TABLE 5-5 SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS TO PATIENTS IN DRGs 89 AND 90 (Simple Pneumonia and Pleurisy) 5-11

TABLE 5-6A INTERNAL MEDICINE CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENT IN DRG 89 (Simple Pneumonia and Pleurisy) 5-12

TABLE 5-6B PULMONARY DISEASE CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENT IN DRG 89 (Simple Pneumonia and Pleurisy) 5-12

TABLE 6-1 CHARACTERISTICS OF PATIENTS IN DRGs 210 AND 211 6-3

TABLE 6-2 CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 210 AND 211 6-5

TABLE 6-3 CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 210 AND 211 6-7

TABLE 6-4 VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 210 AND 211 6-8

FIGURE 6-1 CONSULTS PER PATIENT BY INPATIENT DAY AND BY DRG FOR PATIENTS WITH HIP AND FEMUR PROCEDURES 6-9

TABLE 6-5 SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS TO PATIENTS IN DRGs 210 AND 211 (Hip and Femur Procedures) 6-11

TABLE 6-6 ORTHOPEDIC CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIANS FOR PATIENTS IN DRG 210 (Hip and Femur Procedures) 6-12

TABLE 7-1 MEAN REIMBURSEMENT FOR INPATIENT CONSULTS AND HOSPITAL VISITS OF COMPARABLE TYPE AND LEVEL OF COMPLEXITY, BY PHYSICIAN SPECIALTY 7-2

TABLE 7-2 CORRELATIONS BETWEEN INPATIENT CONSULTS AND INPATIENT VISITS AT CARRIER AND DISCHARGE LEVELS, FOR SELECTED DRGs 7-4

TABLE 7-3 CONSULTS PER DISCHARGE BY GEOGRAPHIC REGTION FOR SELECTED DRGs 7-5

TABLE 7-4 VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR SELECTED DRGs 7-6

TABLE 8-1 VARIABLE MEANS 8-4

TABLE 8-2 ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR SIMPLE PNEUMONIA AND PLEURISY (DRGs 89 AND 90) 8-6

TABLE 8-3 ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR ACUTE MI (DRGs 121, 122, and 123) 8-7

TABLE 8-4 ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR HIP AND FEMUR PROCEDURES (DRGs 210 AND 211) 8-8

1.0 INTRODUCTION

1.1 Statement of the Problem

Expenditures for physician services represent one of the fastest growing components of the Medicare budget. One study of physician services in four states showed that physician spending per eligible rose 29.5 percent from 1983 to 1986, even though a physician fee freeze was in effect for most of this period. (Mitchell et al., 1989) That study demonstrated that three categories of physician services (surgical procedures, radiology, and other diagnostic tests) were responsible for most of the increased spending.

Other types of physician services, although responsible for less dramatic spending increases, are also believed to contribute to excessive physician spending. For example, physician consultations services in hospitals were estimated to account for only $404 million in Medicare payments in 1985, approximately 0.5 percent of all Medicare physician expenditures. Nevertheless, Medicare policymakers and Medicare carriers have expressed concerns about the appropriateness of physician claims for physician consults. (Office of the Inspector General, 1988) That report estimated that changes in reimbursement policies for consults could result in savings of $73 million per year for HCFA, the equivalent of 18 percent of 1985 Medicare expenditures on inpatient consultations.

The present study contains descriptive and multivariate analyses of physician consultation services provided to Medicare beneficiaries in calendar year 1986. Its purpose is to add to our understanding of the distribution of consultation services by physician specialty, hospital and patient characteristics, and geographic region.

1.2 Definition of Physician Consultation

The traditional consult or consultation is familiar to most of us: a physician faced with a difficult clinical problem may request the opinion or

advice of a colleague who possesses the relevant knowledge or skills. Such requests for consultations are usually from physicians in one specialty to those in other specialties. For example, an internist may request the advice of a urologist in understanding whether a 50-year-old man's urinary hesitancy may be aggravated by his antihypertensive medications. A general surgeon may consult an internist regarding peri-operative management of a patient's diabetes. Such requests for consultation may be made for ambulatory or hospitalized patients.

A number of problems have arisen, however, when payers such as Medicare attempt to define physician consultations as a distinct service, and to reflect these definitions in their reimbursement policies. Several definitions of this service have been developed. The first official Medicare definition of a consultation was provided by the Medicare Carrier's Manual (MCM). According to that source, a consultation is:

> "a professional service furnished by a second physician or consultant ***at the request of the attending physician.*** Such a consultation includes the ***history*** and ***examination*** of the patient as well as the ***written report*** which is furnished to the attending physician for inclusion in the patient's medical record."* [emphasis added]

Medicare later incorporated the following CPT-4 definition of a consultation into its policy:

> "services rendered by a physician whose opinion or advice is ***requested by a physician or other appropriate source*** for the further evaluation and/or management of the patient. When the consulting physician assumes responsibility for the continuing care of the patient, any subsequent service rendered by him will cease to be a consultation."** [emphasis added]

According to a study of physician consults by the Office of the Inspector General,*** these definitions are not as similar as they appear. Significantly, the CPT-4 definition does not explicitly require the consulting

---

*Office of Inspector General, Medicare Physician Consultation Services (June, 1988), p. 2.

**American Medical Association, Physicians' Current Procedural Terminology (Chicago: 1983), p. xvii.

***Office of Inspector General, Medicare Physician Consultation Services, p. 3.

physician to obtain the patient's history, perform a physical examination, or to complete a written report of the consultation. The CPT-4 definition also allows individuals other than the attending physician to make requests for consults. A number of other differences exist between the two definitions.

Not surprisingly, the Inspector General's study of physician consultation services under Medicare documented a significant level of confusion among physicians and Medicare carriers about the kinds of services that should be reimbursed as consultations, and found a high degree of inappropriate payment for consultations by comparing physician claims with patient records. The report found that 10 percent of the consult claims actually represented physician visits rather than consults. An additional 67 percent of consult claims were billed at inappropriately high levels. The report also found a number of differences in carrier policies regarding consultations. For example, some carriers reimbursed physicians for follow-up consultations, while some did not.

The present study uses Medicare claims as a data source, and does not attempt to verify the accuracy of claims by comparison with patient records. However, through the use of a large data base containing both MEDPAR (Medicare Part A claims for inpatient services) and BMAD data (Medicare 5 percent beneficiary file of Part B claims for physician services), this study examines the distribution of physician consultations by specialty, carrier, and region, and by level and location of service, and reports the mean reimbursement for these services across the same variables.

This study also examines inpatient consultation services in much greater detail. Here we had two objectives. First, we attempted to relate the number of consultations per admission to characteristics of the patient, the episode of illness, and the hospital in which the patient was treated. Second, we wanted to examine whether physicians frequently submitted claims for consults rather than for visits when providing routine care for inpatients. A direct answer to this question can be obtained only by comparing physician claims with actual inpatient records. However, such a pattern of substitution would be strongly implied if the rate of consults was found to vary inversely with the rate of visits across subgroups of admissions (e.g., by DRG, physician

specialty, or carrier). Such inappropriate use of the procedure codes for consultations would be of concern to Medicare since physicians often receive higher reimbursement for consultations than for inpatient visits.

1.3 Executive Summary

Services rendered by physicians represent one of the most rapidly growing components of health care expenditures under Medicare. One study of physician services in four states showed that physician spending per eligible rose 29.5 percent from 1983 to 1986, even though a physician fee freeze was in effect for most of this period. (Mitchell *et al*., 1989). The present study examines one type of physician services, the physician consult. Although physician consultations services in hospitals were estimated to account for only $404 million in Medicare payments in 1985 (approximately 0.5 percent of all Medicare physician expenditures), Medicare policymakers and Medicare carriers have expressed concerns about the appropriateness of physician claims for physician consults. (Office of the Inspector General, 1988.) That report estimated that changes in reimbursement policies for consults could result in savings of $73 million per year for HCFA, the equivalent of 18 percent of 1985 Medicare expenditures on inpatient consultations.

Although the concept of physician consultation is generally understood, it has been difficult to develop a commonly accepted definition that translates into clear policy directives at a carrier level. Given the growth in physician consults and the often ambiguous guidelines for billing consults, Medicare policy makers have a clear need to analyze factors related to increased consultation services and to determine the extent to which physicians may be billing inappropriately for consult services.

Our study examined a 5 percent sample of Medicare Part A and Part B claims for 1986. We looked at the distribution of all physician consults by location, carrier, specialty, and procedure code. We also performed a more detailed analysis of inpatient consults for patients in seven DRGs, in order to examine the influence of patient, hospital, and DRG-specific characteristics on consult rates per discharge. Finally, we reviewed our

findings in an attempt to answer whether physicians may be inappropriately billing consults instead of visits.

Three-fourths of all consults are performed on inpatient services. Most of the remainder are performed in physicians' offices. The distribution of consults by location varies widely by carrier, however. Although Medicare recognizes almost 40 physician specialties, nearly one-half of all consults are performed by physicians in only three specialties: internists, cardiologists, and neurologists. Over forty percent of consults, regardless of location, are billed at the initial comprehensive level.

In our analysis of inpatient consults within several DRGs, the following patient and DRG-specific factors appeared to be related to an increased rate of consults per discharge: the presence of chronic renal failure; and being placed in a DRG distinguished by greater age and/or the presence of complications. Disability as a basis of Medicare eligibility was not associated with increased consult rates. Hospital characteristics related to increased consult rates were: designation as a teaching hospital; location in an urban area; and increasing SMA size. Although teaching hospitals and hospitals in large urban areas had higher consult rates per discharge, they did not always have more complicated patients. Teaching hospitals, for example, did have a disproportionately high share of complicated patients with acute myocardial infarctions, but they had fewer than expected pneumonia patients with advanced age or complications. Further study of the influence of these and other factors on inpatient consult rates would be enhanced by the use of regression analysis.

Our data did not show any clear evidence of substitution of physician consults for visits. If such substitution were taking place on a broad scale, we would have expected to find an inverse correlation between consult and visit rates at the discharge or carrier level. Instead, we found that consult and visit rates are positively correlated, and seem to act as rough measures of the intensity of utilization of physician services. There were some specific areas of concern, however, in which substitution of consults for visits may be occurring and in which more detailed analysis of claims, or comparison of claims with medical charts, may resolve outstanding questions of billing accuracy.

2.0 DATA AND METHODS

2.1 Data Source and File Construction

Our data source for this study was a merged MedPAR and BMAD file prepared by HCFA, containing all Part A and B claims for a five percent sample of beneficiaries in 1986. We used this file in two ways. First we abstracted from this file all paid claims with procedure codes in the range 90600 to 90654, indicating that a consult was performed. (See Table 2-1.) Paid Part B claims extracted from this file were used to obtain general descriptive information concerning the distribution of consults by location, level of service, physician specialty, carrier, and region, to determine differences in reimbursement for consults across the same variables, and to construct and compare utilization rates at the regional level.

The merged MedPAR-BMAD file prepared by HCFA was also used to construct an admission-level data base to study inpatient consults. In constructing this data base, we kept all inpatient admissions (Part A claims). To each inpatient record, we then attached up to ten Part B claims for physician visits or consults*, if the claims matched the inpatient record by beneficiary number and by dates of admission and discharge. The decision to merge no more than ten Part B claims to each admission record was again one of efficiency, to assure that the aggregated file would be manageable. This decision did not compromise the accuracy of our findings, since less than 0.9 percent of admissions had more than ten matching Part B claims. Also, note that Medicare allows "from-through" billing on inpatient physician visits and consults. For example, a physician may visit a hospitalized patient six times within a 10-day period, and submit a single claim for the six visits, listing the first

---

*See Table 2-2 for visit codes.

TABLE 2-1

PROCEDURE CODES FOR PHYSICIAN CONSULTATIONS

90600	Initial consultation; limited
90605	intermediate
90610	extensive
90620	comprehensive
90630	complex
90640	Follow-Up Consultation; brief visit
90641	limited visit
90642	intermediate visit, evaluation, and/or treatment
90643	extended visit requiring re-examination or re-evaluation and/or treatment, same or new illness
90650	Confirmatory consultation; limited
90651	intermediate
90652	extensive
90653	comprehensive
90654	complex

TABLE 2-2

PROCEDURE CODES FOR PHYSICIAN HOSPITAL VISITS

90200	Initial hospital care; brief
90215	intermediate
90220	comprehensive
90240	Subsequent hospital care; brief
90250	limited
90260	intermediate
90270	extended
90280	comprehensive
90285	Newborn care in hospital
90292	Hospital discharge day management

Source: American Medical Association, Physician's Current Procedural Terminology, Fourth Edition, 1986 Revision. Chicago, Ill.: AMA, 1985.

and last dates of service.* Therefore, by limiting the number of merged Part B claims to ten per admission, we were not necessarily limiting the total visits and consults to ten.

Finally, for the 0.9 percent of admissions which had more than ten matching Part B claims, we did capture summary data from claims that we did not attach to the admission record (that is, from claims which exceeded our limit of ten). These summary data included the total number of visits and consults, and the total allowed charges for visits and consults, represented by these unmatched claims. These data were used in determining the mean number of consults and visits per admission and per DRG, but were not used in more detailed analyses because procedure code, physician specialty, and date of service were not retained.

After aggregating visits and consults with admission records, this second data base contained 502,370 records. These aggregated Part A and Part B records contained two levels of information. The first segment contained information on the hospital admission, including DRG, dates of admission, and the hospital identifier. The next segment contained up to ten physician claims for visits or consults. Each physician claim included the physician's specialty, dates of service, the number of services (visits or consults) being billed on the claim, and the total amount of allowed charges for these services. Using these merged records, we obtained the total number of consults and visits provided to patients within each DRG, as well as the mean number of consults and visits per discharge within each DRG. Appendix A-1 shows the number of discharges, the average length of stay, and the consult and visit rates per discharge for each DRG.

From these lists, we selected seven DRGs for further study. These DRGs were chosen to include common medical and surgical conditions, with reasonable

---

*For example, in our sample from the 1986 merged MedPAR and BMAD 5 percent Beneficiary file, 33.6 percent of visit claims used the from-through billing format ("from" date not equal to "through" date), while 67.6 percent of all visits in the sample were billed in this manner. The mean number of visits billed on such claims was 2.0

variation in consultation rates. We also took care to include "paired" DRGs: those diagnostic groups which differentiate patients with similar conditions on the basis of age or the presence or absence of complications. We wanted to analyze admissions within these paired DRGs to determine whether consultation rates were higher for patients who were older or had complications. Table 2-3 lists the DRGs selected for detailed study.

For records retained in this smaller data base with 7 DRGs, we then added a third segment of descriptive information about the hospital identified on each admission record. The data on individual hospitals was obtained by matching the Medicare hospital identifier to a data file provided by the American Hospital Association. This smaller data base with its three-tiered record was then used to analyze in greater depth the utilization of physician consultations on hospital inpatient services, and to analyze the relationship between consultation rates and characteristics relating to the patient, the DRG, and the hospital in which the admission took place. Results of our descriptive analysis are presented in chapters 4 through 7.

Finally, we added a fourth level of information to each discharge record by matching the beneficiary's county of residence against the Area Resource File for 1986 to obtain the county population and the number of patient-care physicians in each county. These two variables were used to estimate the number of patient-care physicians per capita by county. This variable, together with data at the hospital, patient, and DRG-specific levels, was used in a multivariate analysis of the probability of a patient having at least one consult during the course of an admission. These results are presented in Chapter 8.

TABLE 2-3

DRGs INCLUDED IN DETAILED ANALYSIS OF INPATIENT CONSULTATIONS

No.	DRG Name	Number of Discharges	Average Length of Stay	Number of Consults	Rate (per Discharge)	Consults Per Day	Number of Visits	Rate (per Discharge)	Visits Per Day
	Simple pneumonia & pleurisy,								
89	age greater than 69 and/or CC	15,922	9.0	8,138	0.51	0.06	135,004	8.48	0.94
90	age 18-69 without CC	726	6.9	185	0.25	0.04	4,329	5.96	0.86
	Totals and Means	16,648	8.9	8,323	0.50	0.06	139,333	8.37	0.94
	Circulatory disorders with AMI								
121	and CV complications, discharged alive	5,524	11.0	4,068	0.74	0.07	50,204	9.09	0.83
122	without CV complications, discharged alive	5,897	8.4	3,314	0.56	0.07	42,169	7.15	0.85
123	expired	2,978	5.3	1,972	0.66	0.12	11,548	3.88	0.73
	Totals and Means	14,399	8.8	9,354	0.65	0.07	103,921	7.22	0.82
	Hip & femur procedures except major joint,								
210	age greater than 69 and/or CC	5,317	14.6	6,127	1.15	0.08	38,945	7.32	0.50
211	age 18-69 without CC	284	11.7	174	0.61	0.05	1,210	4.26	0.36
	Totals and Means	5,601	14.5	6,301	1.12	0.08	40,155	7.17	0.49

Source: 1986 MedPAR and BMAD 5% Beneficiary Files.

3.0 GENERAL FINDINGS

3.1 Distribution of Consultations by Location

Our merged 1986 Part A- Part B claims file contained 518,585 physician consults. Total allowed charges for consults in all locations was $34,511,831 for this five percent sample of beneficiaries. Extrapolating from this sample, the estimated total 1986 Medicare expenditures for physician consults in all locations was $690 million.

The majority of physician consults (75.6 percent) were performed on hospital inpatient services. Another 19.9 percent were performed in physicians' offices. Hospital outpatient departments and ambulatory surgical facilities accounted for only 3.3 percent of consults. (See Table 3-1.)

However, the distribution of physician consults by location differed markedly by Medicare carrier. For example, the proportion of consults performed on inpatient services ranged from a low of 44.1 percent (for Washington state) to a high of 89.3 percent (for Alabama). The percent of consults performed in physician's offices ranged from 8.4 percent (Arkansas) to 53.4 percent (Washington state). The percent of consults performed in hospital outpatient departments and in ambulatory surgical facilities ranged from 0.6 percent (Rhode Island) to 14.7 percent (Minnesota). The distribution for each carrier is given in Appendix A-2.

3.2 Correlations Between Consult Rates and Visit Rates by Carrier

The marked differences in distribution of consultations by location (office, inpatient, and OPD) among carriers raised several interesting questions. Carrier differences in consult distribution might reflect differences in carrier policies and physician practice patterns. Carriers such as those in Arkansas and Alabama, where almost 90 percent of consults occur on hospital inpatient services, might have either very high rates of inpatient consults, or very low rates of consults in other locations. Where carriers had low rates of consultations in ambulatory settings, perhaps claims for physician visits were being substituted for consultation claims.

TABLE 3-1

DISTRIBUTION OF CONSULTATIONS BY LOCATION

Location of Service	Percent
Inpatient Hospital	75.6%
Physicians' Offices	19.9
Outpatient Hospital and Ambulatory Surgical Facilities	3.3
All Other Locations	1.2
Total	100.0

Source: 1986 merged MedPAR and BMAD 5% Beneficiary File.

To answer these questions, we developed utilization rates (per 1,000 Medicare beneficiaries) for consultations by carrier for each of three locations (hospital inpatient, hospital outpatient, and physician's offices), as well as for physician visits in hospitals and in offices (visits in outpatient departments are missing for several carriers). These rates are shown in Appendix A-3. We then obtained correlations between visit and consultation rates for these locations. Five separate correlation matrices were obtained: one for all carriers, and a separate matrix for each of the four major regions of the U.S.

Only 51 carriers were included in these matrices. Our file had no Part B data for Wisconsin, and consult data for two carriers in the New York City area were incomplete since these carriers use nonstandard procedure codes for billing physician consults. In addition, 14 of the 51 remaining carriers, primarily in the South and North Central regions, reported no physician visits in hospital outpatient departments or ambulatory surgical facilities. Data for physician visits in these two locations is therefore incomplete and is not reported. The failure of these 14 carriers to report physician consults in outpatient departments and ambulatory surgical facilities has several possible explanations: incomplete reporting of claims data by carriers; failure to use unique codes to identify services provided in these locations; or carrier policies that disallow claims for consults provided in these locations. (It is extremely unlikely that such lack of reporting results simply from physician's practice or billing behavior; that is, that no physicians in these areas are providing or billing consults in OPDs or ASFs.)

Nationwide, utilization rates for hospital consults showed significant positive correlations with hospital visits, office consults, and office visits. However, at the regional level these correlations were not always consistent. The Pearson correlation coefficient for these relationships at the national and regional levels are shown in Table 3-2.

TABLE 3-2

CORRELATIONS BETWEEN CARRIER-BASED UTILIZATION RATES OF CONSULTS AND VISITS IN HOSPITALS AND PHYSICIAN OFFICES

	Hospital Consult Rate
Hospital Visit Rate	
All Carriers	(0.44)*
North	--[a]
North Central	(0.88)**
South	--
West	(0.78)*
Office Visit Rate	
All Carriers	(0.31)
North	--
North Central	--
South	--
West	--
Office Consult Rate	
All Carriers	(0.29)
North	--
North Central	--
South	(0.61)
West	(0.62)

All coefficients are significant at $p < 0.05$, except:
* $p < 0.005$
** $p < 0.0005$

[a] Correlation coefficient is not significant and is not shown.

Source: 1986 merged MedPAR and BMAD 5% Beneficiary File.

3.3 Physician Consults By Specialty

Considering all locations, 97.7 percent of all consults were performed by physicians in 19 different specialties. These specialties, and the percent of consultations performed by each, are listed in Table 3-3. With the exception of ophthalmologists and radiologists, physicians in all specialties performed the majority of their consultations on hospital inpatient services. (See Table 3-4.) Ophthamologists, unlike other physicians, performed 78 percent of their consults in their own offices. Radiologists performed 44 percent of their consults in hospital outpatient departments (including emergency rooms), with the remainder split between inpatient services and physicians' offices. Table 3-4 shows the distribution of physician consults by location and specialty.

3.4 Physician Consults by Procedure Code

Forty-two percent of all consultations were billed at the initial comprehensive level. (See Table 3-5.) This was the most commonly billed type of consult regardless of physician specialty or location, with only a few exceptions: general and family practitioners and dermatologists billed most frequently at the initial limited level for consults performed in the physician's office; and psychiatrists also most commonly billed the initial limited level for consults performed in hospital outpatient departments.

For all locations and physician specialties, the second most commonly billed level was the intermediate follow-up consult. However, the second most frequent consult code showed great variation when individual locations and physicians specialties were examined. In general, physicians billed follow-up consults more frequently on hospital inpatient wards than in other locations. Twenty-nine percent of inpatient consults were follow-up consults, while only 24 percent of all consults were follow-ups. While it is most likely that some portion of these follow-up consults should actually have been billed as visits, the degree of substitution of consults for visits can not be

---

TABLE 3-3

DISTRIBUTION OF CONSULTATIONS BY SPECIALTY (ALL LOCATIONS)

Physician Specialty	Number of Consults*	Percent of All Consults
Internal Medicine	3,038,640	29.3%
Cardiology	1,058,200	10.2
Neurology	910,740	8.8
General Surgery	797,780	7.7
Group Practice	575,420	5.5
Urology	463,120	4.5
Gastroenterology	454,120	4.4
Pulmonary Medicine	443,400	4.3
Ophthalmology	352,080	3.4
Orthopedic Surgery	337,800	3.3
General Practice, Family Practice	310,740	3.0
Radiology	217,520	2.1
Thoracic Surgery	199,280	1.9
Psychiatry	193,300	1.9
Neurosurgery	179,560	1.7
Ear, Nose & Throat	172,700	1.7
Physical Medicine & Rehabilitation	156,200	1.5
Nephrology	152,640	1.5
Dermatology	119,040	1.1
All Other Specialties	239,420	2.3
Total	10,371,700	100.0%

---

*Sample n's for each specialty have been multiplied by twenty in order to estimate actual number of consults from our 5 percent sample of beneficiaries.

Source: 1986 merged MedPAR and BMAD 5% Beneficiary File.

TABLE 3-4

DISTRIBUTION OF CONSULTS BY LOCATION AND SPECIALTY[a]

	Physicians' Offices	Hospital Inpatient	Hospital OPD and Ambulatory Surgical Facilities
General Practice/Family Practice	20.7%	72.2%	7.1%
General Surgery	20.9	76.5	2.6
Cardiology	12.0	86.5	1.5
Dermatology	46.2	51.5	2.3
Gastroenterology	16.4	80.7	2.9
Internal Medicine	12.9	85.4	1.7
Neurology	24.4	74.3	1.3
Neurosurgery	33.1	65.7	1.1
Ophthalmology	77.9	19.0	3.1
Orthopedic Surgery	29.4	66.3	4.4
Physical Medicine & Rehabilitation	13.8	78.0	8.2
Psychiatry	14.8	83.0	2.1
Pulmonary Medicine	9.2	89.3	1.5
Thoracic Surgery	20.1	78.6	1.3
Urology	18.3	79.2	2.5
Nephrology	4.1	95.4	0.5
Group Practice	26.9	66.2	7.0
Ear, Nose & Throat	42.3	55.2	2.5
Radiology	25.1	30.8	44.1
All Specialties	20.3	75.1	3.5

---

[a] Rows may not sum to 100%, because "all other locations" are not shown here.

Source: 1986 merged MedPAR and BMAD 5% Beneficiary File.

TABLE 3-5

DISTRIBUTION OF CONSULTATIONS BY LEVEL OF SERVICE (ALL LOCATIONS)

Procedure Code		Percent	Mean Allowed Charges
90600	Initial, limited	7.3%	$42.54
90605	intermediate	6.9	49.52
90610	extensive	9.4	62.97
90620	comprehensive	41.9	83.39
90630	complex	10.1	110.20
90640	Follow-Up, brief	2.9	20.80
90641	limited	4.9	25.84
90642	intermediate	11.5	32.13
90643	extended	4.9	48.39
90650 to 90654	Confirmatory Consultations (All Levels)	0.2	55.36
Total		100.0	

Source: 1986 merged MedPar and BMAD 5% Beneficiary File, and American Medical Association, Physician's Current Procedural Terminology, Fourth Edition, Chicago, Ill.: AMA, 1984.

determined from these data. Physicians are frequently asked to reevaluate a patient's condition or response to treatment and to give further advice regarding diagnosis or management. According to CPT-4, the patient contact should be billed as a visit rather than a consult only if the physician has assumed responsibility for all or part of the patient's management. Such determinations can not be made from claims data, but require examination of medical records.

The least commonly billed types of consults were confirmatory consults, accounting for only 0.2 percent of all consults in all locations.

3.5 Carrier Differences in Use of Procedure Codes for Consults

Our data contained no claims for physician consults for the region covered by Blue Shield of Greater New York (Long Island, downstate New York, and New York City except Queens), since this carrier uses its own unique set of codes for consultations. It seemed very likely that the same set of procedure codes were commonly used by physicians in billing the other Medicare carrier in New York City (Group Health Insurance, which covers Queens), since this carrier had an extraordinarily low rate of consults in all locations when only the standard CPT-4 procedure codes for consults were considered.

Among the remaining Medicare carriers, there were few significant differences in the use of consult codes. All other carriers appeared to allow the use of the full set of CPT-4 consult codes, with two possible exceptions. First, many carriers showed no claims for confirmatory consults. Since confirmatory consults represented only 0.2 percent of all consults, and accounted for no more than 1 percent of consults even for carriers which clearly allowed them, it is most likely that physician practices rather than carrier policy accounted for the lack of confirmatory consult claims among some carriers.

Secondly, although the OIG report states that five of fifteen carriers studied did not allow the use of the follow-up consultation codes, we found that all carriers in our data had paid claims for follow-up consultations in at least some locations. While several small carriers showed no claims for

follow-up consults in certain locations (such as hospital outpatient departments), the total number of consults for each of these small carriers was quite low, and the absence of follow-up consults in low-volume locations such as OPDs is more likely to be attributable to chance than to carrier policy.

4.0 ANALYSIS OF CONSULTS WITHIN THE ACUTE MYOCARDIAL INFARCTION DRGS

In order to understand better the factors that affect the provision of inpatient consultation services, we decided to study consults performed within several selected DRGs. Based on number of admissions, number of consults, and the existence of "paired" DRGs which indicate the presence or absence of complications, we chose seven DRGs in three closely-related groups for further study. (See Table 2-3 for a list of these seven DRGs.)

The first group of DRGs we selected were:

121 - Circulatory Disorders with Acute Myocardial Infarction and Cardiovascular Complications, Discharged Alive;

122 - Circulatory Disorders with Acute Myocardial Infarction Without Cardiovascular Complications, Discharged Alive;

123 - Circulatory Disorders with Acute Myocardial Infarction, Expired.

4.1 Description of Diseases in DRGs 121, 122, and 123

Patients included in these DRGs typically presented to a physician's office, clinic, or emergency room with symptoms suggestive of myocardial infarction. At some point after admission, the suspicion of myocardial infarction was confirmed by electrocardiographic and/or blood chemistry changes consistent with damage to heart tissue, and the diagnosis of acute myocardial infarction was made. Some of the patients with AMI developed cardiovascular complications such as arrhythmias, congestive heart failure, or shock; those who survived these complications were placed in DRG 121. Others, less fortunate, expired during the admission and were placed in DRG 123.

Management of acute myocardial infarction can be divided into several stages. The AMI patient is most at risk for arrhythmias, hypotension, and other potentially fatal complications during the first two or three days after infarction. During this time, the patient is kept at bed rest, usually in an intensive care unit, and is monitored to insure that symptoms, heart rate and rhythm, and blood pressure are stable and well-managed.

If no complications are encountered in the first 48 to 72 hours, the patient is usually transferred to a less restrictive and less intensively monitored environment, and is gradually allowed increased physical activity. Most patients undergo further evaluation of cardiac function during the post-MI hospitalization. The patient also usually enters a program of cardiac rehabilitation, which deals with management of risk factors which may exacerbate coronary artery disease, including diet, smoking, stress, and excessive physical exertion.

Although they may have other underlying chronic diseases such as arthritis or diabetes, most patients with acute MIs do not require extensive inpatient evaluation of these non-cardiovascular problems during post-MI hospitalization. Most consults during the post-MI hospital period are performed for evaluation and management of the cardiovascular system.

4.2 Distribution of Discharges in DRGs 121, 122, and 123 by Patient and Hospital Characteristics

Table 4-1 describes some of the demographic and hospital characteristics of admissions in these three DRGs. The mean age of AMI patients with complications was higher than that of patients without complications (75.2 years vs. 72.4 years), but was lower than the mean age of patients who died during admission (77.0).

The distribution of patients by sex within the three DRGs is interesting. A higher than expected proportion of the uncomplicated AMIs were men, whereas women had greater than expected representation among AMI patients with complications and among those who died. Men develop coronary artery disease at an earlier age than do women, and deaths from acute myocardial infarction are more common among men before the age of 65, the usual lower limit of Medicare eligibility. Women are disproportionately represented among aged Medicare beneficiaries (59.6 percent female vs. 40.4 percent male in 1982). Greater representation of women among expired AMI patients (DRG 123) is consistent with the sex distribution of aged Medicare beneficiaries, who represent more than 90 percent of all Medicare beneficiaries.

TABLE 4-1

CHARACTERISTICS OF PATIENTS IN DRGs 121, 122 and 123 (Circulatory Disorders with Acute MI)

	DRG 121*	DRG 122	DRG 123	All 3 DRGs
Mean Age (Years)	75.2	72.4	77.0	74.5
Mean Length of Stay (Days)	11.0	8.4	5.3	8.8
Mean Number of Consults	0.74	0.56	0.66	0.65
Mean Number of Visits	9.09	7.15	3.88	7.22
Sex				
Percent Male	50.2%	56.1%	46.5%	51.8
Percent Female	49.8	43.9	53.5	48.2
	100.0%	100.0%	100.0%	100.0%
Percent Aged	93.1	90.5	94.4	92.3
Percent Disabled	5.7	8.6	4.5	6.6
Percent with Chronic Renal Failure	1.2	0.9	1.1	1.1
	100.0	100.0	100.0	100.0
Percent in Teaching Hospitals	29.7	26.6	28.8	28.2
Percent in Non-Teaching Hospitals	70.3	73.4	71.2	71.8
	100.0	100.0	100.0	100.0
Percent by Urban/Rural Status				
Rural areas	28.9	30.2	27.9	29.2
Cities under 250,000	13.7	13.5	13.6	13.6
Cities between 250,000 and 1,000,000	25.6	25.5	26.7	25.8
Cities over 1,000,000	31.8	30.8	31.8	31.4
	100.0	100.0	100.0	100.0

*DRG 121 - with cardiovascular complications, discharged alive.
DRG 122 - without cardiovascular complications, discharged alive.
DRG 123 - expired.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Survey of Hospitals.

We also looked at whether patients in the three AMI DRGs differed with respect to disability status or presence of chronic renal disease. For the purposes of these analyses, our category of chronic renal disease included patients with _any_ indication of chronic renal failure (i.e., if the Medicare Status Code showed chronic renal disease as the basis of eligibility, or if the Status Code indicated the presence of chronic renal disease, or if the patient had been identified as an end-stage renal disease beneficiary). Disabled patients were considered to be all patients with disability as the basis of eligibility, _exclusive_ of any patient with an indicator of chronic renal disease. In our analyses, then, the three categories of aged, disabled, and chronic renal disease were mutually exclusive.

Chi-square analysis ($p = 0.0001$) showed that disabled patients were disproportionately represented in DRGs 121 and 123 (patients with complications and patients who expired). The presence of chronic renal failure, however, did not appear to be related to DRG, although such a relationship would have been difficult to detect given the small number of patients with renal failure in the sample (156 patients, or 1.1 percent of patients in the three DRGs).*

An examination of discharges by teaching status revealed that teaching hospitals (those hospitals with any full-time residents) had a disproportionate share of AMI patients who experienced complications or who died during admission (Chi-square significant at $p < 0.001$.) However, the distribution of AMI discharges by DRG among hospitals in rural areas and in small, medium, and large cities was not remarkable (that is, the Chi-square was not significant).

---

*The BMAD 5 percent beneficiary file, as supplied by HCFA, contains 100 percent of beneficiaries whose Medicare eligibility was based on end-stage renal disease. However, before analyzing the file we reduced the sampling of ESRD beneficiaries from 100 percent to 5 percent by applying the same sampling algorithms that had been used to derive the sample of aged and disabled beneficiaries.

4.3 Distribution of Physician Consults in DRGs 121, 122, and 123 by Patient and Hospital Characteristics

Table 4-2 shows the consult and visit rates per discharge for each of the demographic and hospital categories used to describe discharges in Table 4-1. Differences in consult rates for men and women were small and were not significant for any of the three DRGs. In all three DRGs, women with AMI received more physician visits than did men; these differences were significant for DRGs 121 and 122 ($p < 0.01$), but not for DRG 123 (i.e., those who died during the admission).

It is clear from Table 4-2 that AMI patients with chronic renal failure received more consults than did either aged or disabled patients. Analysis of variance showed the differences between these three groups to be significant at $p < 0.0005$, for each of the three DRGs. Although patients with chronic renal failure also received more visits than aged or disabled patients, the differences were significant only for DRG 122 (uncomplicated AMIs).

Teaching hospitals had significantly more visits and consults per discharge in each of the three DRGs ($p < 0.001$ for DRGs 121 and 122; $p < 0.05$ for DRG 123). When examined by urban/rural status and by SMA size, higher rates of consults and visits were associated with urban status and with increasing SMA size. These relationships were statistically significant for each of the three DRGs ($p < 0.001$).

4.4 Distribution of Physician Consults and Visits by Geographic Region

Table 4.3 shows that AMI patients hospitalized in the Northeast had more consults per admission than did patients in other regions of the country, regardless of DRG. For the three DRGs, the overall rate of consults in the Northeast (0.90 consults per admission) was approximately 50 percent higher than consult rates in other regions (0.53 to 0.62 consults per admission).

TABLE 4-2

CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 121, 122, AND 123 (Circulatory Disorders with Acute MI)

	CONSULTS				VISITS			
	DRG* 121	DRG 122	DRG 123	All 3 DRGs	DRG 121	DRG 122	DRG 123	All 3 DRGs
Sex								
Male	0.71	0.57	0.72	0.65	8.78	6.75	3.85	6.97
Female	0.76	0.55	0.61	0.65	9.40	7.66	3.90	7.49
Aged	0.72	0.56	0.65	0.72	9.12	7.22	3.80	7.23
Disabled	0.72	0.46	0.59	0.56	8.20	6.17	4.98	6.67
Chronic Renal Failure	2.15	1.53	1.94	1.88	10.58	9.53	5.82	9.17
Teaching Hospitals	0.99	0.74	0.76	0.84	9.76	7.66	4.37	7.81
Non-Teaching Hospitals	0.63	0.50	0.62	0.57	8.81	6.97	3.68	6.98
Urban/Rural Status								
Rural Areas	0.38	0.29	0.34	0.33	7.79	6.49	3.00	6.30
Cities under 250,000	0.71	0.58	0.58	0.63	9.11	6.84	3.73	7.07
Cities between 250,000 and 1,000,000	0.71	0.61	0.78	0.69	9.53	7.81	4.42	7.74
Cities over 1,000,000	1.09	0.78	0.88	0.92	9.90	7.38	4.25	7.71

*DRG 121 - with cardiovascular complications, discharged alive.
DRG 122 - without cardiovascular complications, discharged alive.
DRG 123 - expired.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Survey of Hospitals.

TABLE 4-3

CONSULTS PER DISCHARGE BY GEGORAPHIC REGION FOR DRGs 121, 122, AND 123

	DRG 121	DRG 122	DRG 123	All 3 DRGs
Northeast	0.99	0.73	1.03	0.90
North Central	0.60	0.47	0.52	0.53
South	0.69	0.56	0.61	0.62
West	0.71	0.49	0.57	0.60

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

The Northeast also had the highest rate of visits per admission for patients with acute myocardial infarctions (Table 4.4), although regional differences in visit rates were smaller than differences in consult rates.

4.5 Distribution of Physician Consults in DRGs 121, 122, and 123 by Inpatient Day

Figure 4-1 shows, for each DRG, the number of consults performed per day per hospitalized patient. Most consults are performed within the first four or five days of hospitalization. After day five, there is approximately one consult per day performed for every twenty or thirty patients remaining in the hospital. It is interesting to note that, beginning with the first hospital day, those AMI patients who expire during admission (DRG 123) receive more consults than do those who survive (with or without complications). This trend persists in the data beyond the 28th hospital day.

4.6 Distribution of Physician Consults in DRGs 121, 122, and 123 by Physician Specialty

Table 4-5 lists the ten physician specialties which provided the largest number of inpatient consults for patients with acute MIs. It is interesting to note that almost 40 percent of all consults provided in these three DRGs were performed by cardiologists. There are several ways in which a cardiologist could properly bill Medicare for a consult (rather than a patient visit) when caring for a patient with an AMI. In many hospitals, a patient with a suspected acute MI remains the responsibility of ER physicians and nurses until transferred to the CCU, which may take several hours, depending on the availability of CCU beds, initial evidence of MI on EKG, and so forth. While still undergoing evaluation in the emergency room, the patient might have been seen by a consulting cardiologist as well as by the emergency room attending physician or resident. It also happens, but less frequently, that a patient already admitted to a medical or surgical ward is discovered to have

---

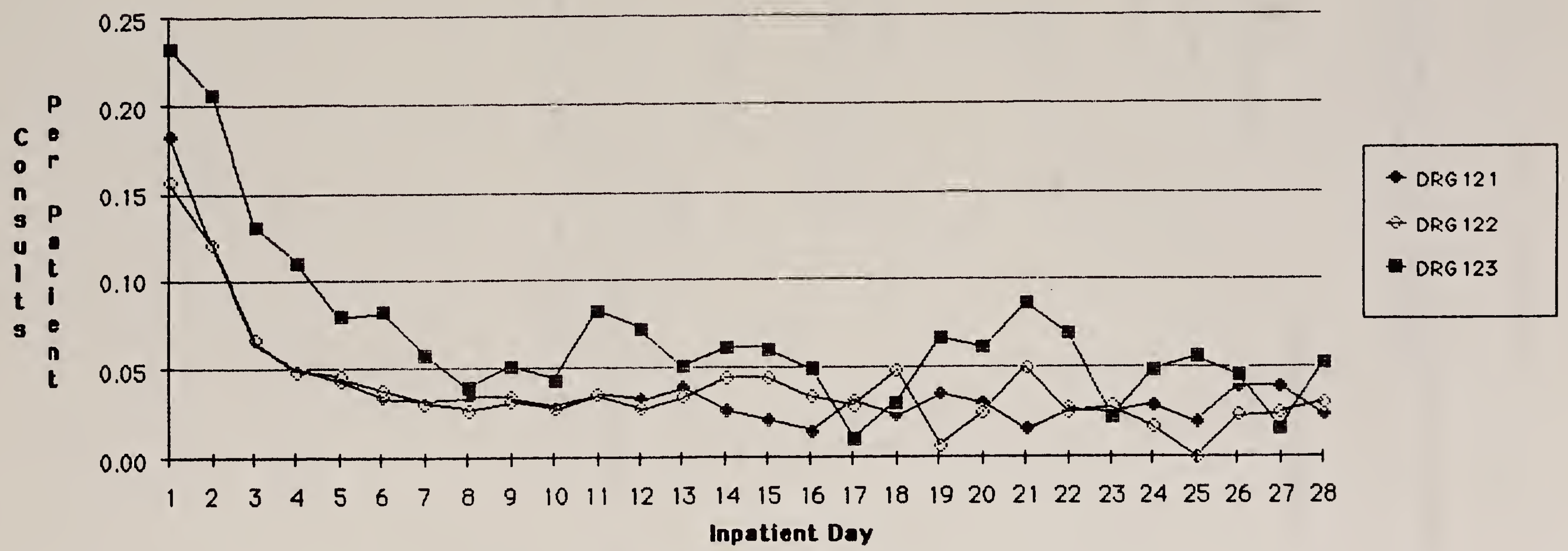
TABLE 4-4

VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 121, 122, AND 123

	DRG 121	DRG 122	DRG 123	All 3 DRGs
Northeast	10.86	8.88	5.63	9.03
North Central	9.67	7.38	3.62	7.44
South	7.63	6.27	2.82	6.06
West	8.64	6.51	3.92	6.85

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

Figure 4-1. Consults Per Patient
By Inpatient Day and By DRG
For Patients with Acute MI



DRG 121 - with CC, discharged alive
DRG 122 - without CC, discharged alive
DRG 123 - expired

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files

TABLE 4-5

SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS FOR PATIENTS IN DRGs 121, 122, AND 123 (Circulating Disorders with Acute MI)

		Percent of Total	Estimated N*
1.	Cardiovascular Disease	39.7%	74,271
2.	Internal Medicine	26.8	50,137
3.	Group Practice	5.1	9,541
4.	Neurology	5.1	9,541
5.	Pulmonary Disease	4.4	8,232
6.	General Surgery	3.7	6,922
7.	Urology	2.7	5,051
8.	Thoracic Surgery	2.2	4,116
9.	General and Family Practice	1.7	3,180
10.	Psychiatry	0.8	1,497
11.	All other specialties	7.8	14,592
	Total	100.0%	187,080

---

*Estimated from 5 percent sample by multiplying sample n by 20.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

electrocardiographic abnormalities consistent with an AMI and is seen by a consulting cardiologist prior to transfer to a coronary care or intensive care unit. It is less likely that a non-cardiologist would act as the attending physician of a patient with a diagnosed AMI, while a cardiologist served merely as a consulting physician.

Many AMI patients, of course, have one cardiologist as an attending physician, while another cardiologist provides one-time consulting (not concurrent care) services such as cardiac catheterization or pre-discharge submaximal stress testing. If the physician providing the procedure also provided significant other patient evaluation and treatment unrelated to the procedure, it might be appropriate to bill for a consult in addition to the procedure.

Another common service provided to post-MI patients during inpatient recuperation is cardiac rehabilitation, a process of progressive ambulation and patient education about diet, smoking, exercise, and stress management. This service is usually provided by physical or occupational therapists under the direction of a cardiologist, and is frequently billed as a consultation service. This service may account for a large number of inpatient cardiology consultations for AMI patients, although it may be argued that such care is actually concurrent care rather than consultation.

In an attempt to examine whether cardiology consults for AMI patients might represent concurrent care, we looked at whether the frequency of cardiology consults varied by the specialty of the patient's attending physician. One would expect that attending physicians who are not cardiologists would order more cardiology consults for AMI patients than would cardiology attendings. If cardiology attendings order cardiology consults just as frequently as non-cardiologists, then the chances are greater that many of these cardiology consults represent concurrent care or visits erroneously billed as consults.

In order to perform this analysis, we needed to assume that the attending physician for each discharge was the physician who had provided the most visits during the hospitalization. We then developed a frequency table of cardiology consults for those specialties which most often acted as

attendings for AMI patients. These frequencies are shown in Table 4-6. The three specialties most often acting as attendings for patients in DRGs 121, 122 and 123 were general and family practitioners, cardiologists, and internists. Cardiologists ordered fewer cardiology consults than general or family practitioners; nevertheless, more than 40 percent of all consults ordered by cardiology attendings were cardiology consults. Such a high proportion suggests that many services provided to AMI patients and billed as cardiology consults may actually be routine evaluation, testing, or treatment, including perhaps cardiology rehabilitation services. A second possible explanation is that a high proportion of patients with suspected MIs are seen by cardiology consults in the emergency room or in other locations before they are transferred to the care of a cardiology attending.

The question of whether cardiologists' services are being billed inappropriately as consults rather than visits is an important one to Medicare: cardiologists receive a mean reimbursement of $90.71 for the most frequently billed level of consult (CPT-4 code 90620 - initial comprehensive consult), whereas the highest reimbursement cardiologists receive for inpatient visits is $82.54 (CPT-4 code 90220 - initial comprehensive visit), a 9 percent decrease from the corresponding consult reimbursement. The effect of such miscoding of visits and consults on Medicare overpayments can be estimated as follows. In our 1986 sample, cardiologists had submitted claims for 17,600 initial comprehensive inpatient visits (with mean allowed charge of $82.54), and 10,461 initial comprehensive inpatient consults (with mean allowed charge of $90.71). Let us assume that 10 percent of these consults are actually visits, as suggested by the OIG report. The estimated total 1986 overpayment to cardiologists from this type of miscoding alone would then be approximately $171,000. If such miscoding of consults and visits is widespread among physicians in general, the increased cost to Medicare may be great.

An analysis of consult claims, of course, allows us to merely speculate about the actual nature of services provided during consultations. A more satisfactory understanding of the nature and reasonableness of these cardiology consults can come only from a detailed examination of a sufficient sample of patient records.

TABLE 4-6

CARDIOLOGY CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENTS IN DRGs 121, 122, AND 123 (Circulatory Disorders with Acute MI)

SPECIALTY OF ATTENDING PHYSICIAN	DRG 121*	DRG 122	DRG 123	All 3 DRGs
General and Family Practice	47.1%	49.6%	43.4%	47.4%
Cardiology	42.7	48.5	29.1	41.9
Internal Medicine	39.7	42.5	27.8	36.7

*DRG 121 - with cardiovascular complications, discharged alive.
DRG 122 - without cardiovascular complications, discharged alive.
DRG 123 - expired.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

5.0 ANALYSIS OF CONSULTS WITHIN THE PNEUMONIA DRGs

The second group of DRGs chosen for in-depth analysis includes:

89 - Simple pneumonia and pleurisy, age greater than 69 and/or complications and/or comorbidities;

90 - Simple pneumonia and pleurisy, age 18-69 without complications or comorbidities.

This pair of DRGs was chosen because pneumonia is a relatively common cause for hospitalization among the elderly, and because grouping of patients into DRGs based on age and the presence or absence of complications allows some opportunity to observe whether these factors influence the number of consults and visits received by Medicare patients. Unfortunately, the number of cases in DRG 90 is quite small (726 patients, or less than 5 percent of the number of patients in DRG 89), and sample size somewhat limits our opportunity to make comparisons between these DRGs. Such problems are inherent in using any age-related DRG pair, given the age distribution of Medicare beneficiaries.

5.1 Description of Diseases in DRGs 89 and 90

These two DRGs include infections of the lung (pneumonia) and of the space between the lung and chest wall (pleurisy) from bacterial, viral, or other infectious causes. (Tuberculous infections are excluded from these DRGs.) Pneumonia may occur without preceding symptoms, or may follow upper respiratory infections or influenza. Pneumonia is likely to be more serious in people over age 50, and in people with underlying lung disease or other medical problems, including diabetes, heart disease, alcoholism, or poor nutrition. Pleurisy has become a much less frequent complication of pneumonia with the availability of modern antibiotics.

Management of pneumonia involves identification of the responsible organism, institution of appropriate antibiotic therapy, and (if necessary) support of respiration by artificial ventilation, as well as concurrent management of any serious underlying medical problem which may be exacerbated by or influence the course of the pneumonia. For these reasons, patients who

are seriously ill from pneumonia may require consulting services from the following specialties: infectious disease, pulmonary disease, internal medicine, cardiology, and endocrinology. In addition, surgical consultation may be required, in cases of pleurisy, to drain localized areas of chest wall infection. (A physician who is requested to perform a procedure will frequently examine the patient and provide an opinion as to whether the procedure is indicated and is consistent with good patient management. This is especially likely to occur if the requesting physician is of a different specialty.)

5.2 Distribution of Discharges in DRGs 89 and 90 by Patient and Hospital Characteristics

Table 5-1 shows the distribution of discharges in these two DRGs by patient and hospital characteristics. As expected from the DRG definitions, the mean age of patients in DRG 89 was significantly greater than that of patients in DRG 90 (77.5 vs. 62.5 years). Patients in DRG 89 also stayed longer (9.0 vs. 6.9 days) and had more consults and visits than did the younger, uncomplicated patients in DRG 90. These differences were all significant at $p < 0.0005$.

As with patients with AMIs, a greater than expected proportion of pneumonia patients without complications were men (Chi-square significant at $p < 0.005$). Although most patients, regardless of reason for eligibility, were in DRG 89 (pneumonia and pleurisy age, age > 69 and/or complications or comorbidities), disabled Medicare beneficiaries were disproportionately represented in DRG 90 (age 18-69 without complications) (chi-square significant at $p = 0.0001$). Younger, uncomplicated patients were somewhat over-represented in teaching hospitals, an unexpected finding (p for Chi-square < 0.05). These patients were also over-represented in urban hospitals; rural hospitals had a larger share of older, complicated patients ($p < 0.05$). These findings are most likely explained by a greater liklihood

TABLE 5-1

CHARACTERISTICS OF PATIENTS IN DRGs 89 AND 90

	DRG 89	DRG 90	Both DRGs
Mean Age (Years)	77.5	62.5	76.8
Mean Length of Stay (Days)	9.0	6.9	8.9
Mean Number of Consults	0.51	0.25	0.50
Mean Number of Visits	8.48	5.96	8.37
Sex			
Male	48.9%	43.4%	48.7%
Female	51.1	56.6	51.3
	100.0%	100.0%	100.0%
Aged	93.1	69.5	92.0
Disabled	5.6	30.4	6.7
Chronic Renal Failure	1.3	0.1	1.2
	100.0	100.0	100.0
Teaching Hospitals	24.5	20.4	24.4
Non-Teaching Hospitals	75.5	79.6	75.6
	100.0	100.0	100.0
Urban/Rural Status			
Rural Areas	35.5	41.0	35.7
Cities under 250,000	12.2	11.9	12.2
Cities between 250,000 and 1,000,000	23.6	23.1	23.6
Cities over 1,000,000	28.7	24.0	28.5
	100.0	100.0	100.0

*DRG 89 - Age greater than 69 and/or c.c.
DRG 90 - Age 18-69 without c.c.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Survey of Hospitals.

of the disabled (who are, on average, younger) to be placed in DRG 90, and to a greater concentration of the disabled in urban areas and in teaching hospitals.

5.3 Distribution of Physician Consults and Visits in DRGs 89 and 90 by Patient and Hospital Characteristics

Table 5-2 shows the visit and consult rates per discharge for each of the demographic and hospital categories used to describe the discharges in Table 5-1. The distribution of consults by sex was not consistent across DRGs: men with pneumonia who were over age 69 or who had complications (DRG 89) had more consults than did women in similar circumstances ($p = 0.0001$); however, no significant difference in the consult rate was observed between younger men and women without complications (DRG 90).

Patients in DRG 89 with chronic renal failure received more consults and visits than did the aged or disabled; differences between these groups were significant at the 0.0001 level for consults and 0.05 level for visits. (As in Chapter 4, we are using these three reasons for eligibility as mutually exclusive categories.) The small number of patients with chronic renal failure in DRG 90 did not permit comparisons of consult and visit rates between these patients and the aged or disabled. When only the aged and disabled in DRG 90 were compared, the disabled received more consults per discharge, while the aged received more visits; however, neither difference was significant.

Patients with pneumonia in DRG 89 received more consults and more visits if they were treated in teaching hospitals ($p = 0.0001$). Differences in visit and consult rates for teaching vs. nonteaching hospitals were not significant for DRG 90. As was the case with AMI patients, higher rates of consults and visits were also associated with urban status and with increasing SMA size for patients in DRG 89. For those in DRG 90, only the consult rate showed a significant association with urban status and SMA size.

TABLE 5-2

CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 89 AND 90

	CONSULTS			VISITS		
	DRG 89	DRG 90	Both DRGs	DRG 89	DRG 90	Both DRGs
Sex						
Male	0.54	0.23	0.53	8.35	5.78	8.25
Female	0.49	0.27	0.48	8.61	6.10	8.49
Aged	0.50	0.23	0.49	8.48	6.06	8.41
Disabled	0.51	0.31	0.47	8.12	5.46	7.59
Chronic Renal Failure*	1.29	----	----	9.92	----	----
Teaching Hospitals	0.72	0.34	0.71	9.09	5.59	8.96
Non-Teaching Hospitals	0.44	0.23	0.43	8.28	6.06	8.18
Urban/Rural Status						
Rural Areas	0.19	0.10	0.18	7.58	5.85	7.49
Cities under 250,000	0.43	0.16	0.42	8.23	5.12	8.10
Cities between 250,000 and 1,000,000	0.61	0.37	0.60	9.01	6.24	8.89
Cities over 1,000,000	0.86	0.45	0.85	9.26	6.30	9.16

*DRG 89 - Age greater than 69 and/or c.c.
DRG 90 - Age 18-69 without c.c.

**Blank cells indicate fewer than 50 patients.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Hospital Survey.

5.4 Distribution of Physician Consults and Visits by Geographic Region

For DRG 89 (simple pneumonia and pleurisy in older patients or in patients with comorbidities), the Northeast region again had the highest consult rate per admission (0.73 consults per admission), slightly higher than the rate in the West (0.69 consults per admission). (See Table 5-3.) These rates were approximately double the consult rate in the North Central region (0.37 consults per admission). For DRG 90 (simple pneumonia and pleurisy in younger patients without complications), consult rates were lower in all regions, but again the Northeast and the West had consult rates more than twice that of the North Central and South.

The Northeast also had a higher rate of visits per admission than did other geographic regions (Table 5.4), although (as with AMIs) the regional differences in visit rates are smaller than regional differences in consult rates.

5.5 Distribution of Physician Consults in DRGs 89 and 90 by Inpatient Day

Figure 5-1 shows, for both DRGs, the number of consults performed per day per hospitalized patient. Pneumonia patients over age 69 and those with complications (DRG 89) show a consistently higher number of consults per inpatient day than do younger, uncomplicated patients (DRG 90). (The three spikes in the data plot for DRG 90 result from the very small number of patients in this DRG remaining hospitalized after day 10; the consult rate for this DRG on most days was 0.00, but increased dramatically on days when a small number of consults were performed.)

Compared with Figure 4-1, which shows similar data for AMI patients, Figure 5-1 shows that pneumonia patients had a lower initial rate of consults per day, but that consultation rates again were higher during the first few days of hospitalization. After day four or five, for both sets of DRGs, the consultation rate remained roughly one consult per 20 or 30 hospitalized patients.

TABLE 5-3

CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 89 AND 90

	DRG 89	DRG 90	Both DRGs
Northeast	0.73	0.42	0.72
North Central	0.37	0.19	0.36
South	0.45	0.19	0.44
West	0.69	0.53	0.69

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files

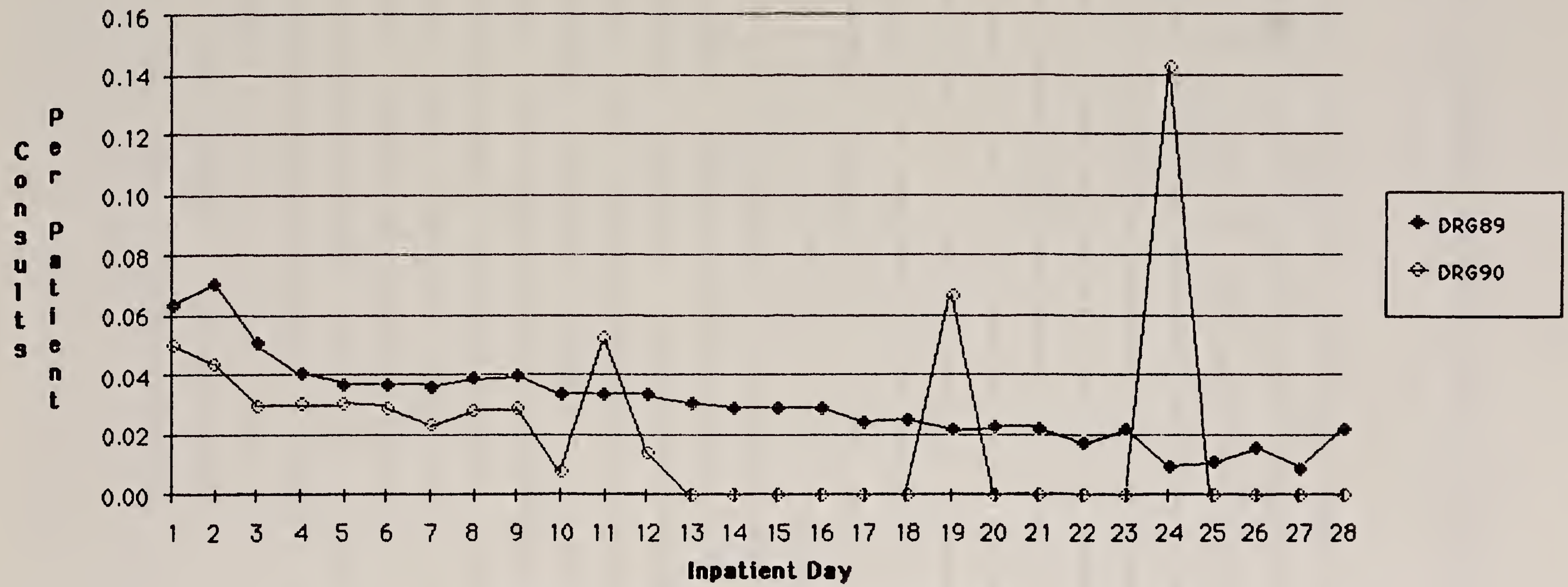
TABLE 5-4

VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGS 89 AND 90

	DRG 89	DRG 90	Both DRGs
Northeast	9.98	7.61	9.90
North Central	8.49	5.87	8.37
South	7.84	5.67	7.73
West	8.14	5.48	8.05

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

Figure 5-1. Consults Per Patient
By Inpatient Day and By DRG
For Patients with Simple Pneumonia & Pleurisy



DRG 89 – age greater than 69 and/or CC
DRG 90 – age 18-69 without CC

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files

5.6 Distribution of Physician Consults in DRGs 89 and 90 by Physician Specialty

Table 5-5 lists the ten physician specialties which provided the largest number of inpatient consults for patients with pneumonia and pleurisy. More than 34 percent of all consults for these patients were performed by internists. However, this figure includes consults to infectious disease specialists, who are classified as internists under Medicare definitions. The second most frequently consulted specialty, pulmonary disease, might be asked to provide opinions regarding the usefulness of bronchoscopy as a diagnostic procedure, or the need for artificial ventilation for support of respiration.

As we did for consults with AMI patients, we attempted to examine whether some of the consults performed for pneumonia and pleurisy patients might actually represent concurrent care. We again assumed that the physician providing the most visits to a given patient was the attending physician. For patients in DRGs 89 and 90, physicians in four specialties most often served as attending physicians: general and family practitioners, cardiologists, internists, and pulmonary specialists. We then examined whether these four specialties differed in the frequency with which they consulted internists (Table 5-6A) and pulmonary specialists (Table 5-6B) for patients with pneumonia or pleurisy. The tables show that, when acting as attending, three of the four specialties (general and family practice, cardiologists, and internists) were more likely to consult an internist than a pulmonary specialist. However, patients with pulmonary specialists as attendings were more likely to have pulmonary disease consults than internal medicine consults. This difference might be observed if pulmonary specialists frequently see pneumonia patients first as a consult, and later become the attending physician for the patient. If this sequence of events occurred frequently enough, there would be a strong association between pulmonary specialists as attending physicians and as consults. It is also possible, however, that pulmonary specialists as attendings consult other pulmonary

TABLE 5-5

SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS TO PATIENTS IN DRGs 89 AND 90 (Simple Pneumonia and Pleurisy)

1.	Internal Medicine	34.5%
2.	Pulmonary Disease	19.2
3.	Cardiovascular Disease	9.3
4.	General Surgery	6.5
5.	Neurology	5.5
6.	Clinic or Other Group Practice	5.1
7.	Urology	4.3
8.	Gastroenterology	3.3
9.	Thoracic Surgery	1.7
10.	Otology, Laryngology, Rhinology (ENT)	1.6

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

TABLE 5-6A

INTERNAL MEDICINE CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENT IN DRG 89 (Simple Pneumonia and Pleurisy)

SPECIALTY OF ATTENDING PHYSICIAN	DRG 89
General and Family Practice	33.0%
Cardiology	38.2
Internal Medicine	36.4
Pulmonary Disease	16.9

TABLE 5-6B

PULMONARY DISEASE CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIAN FOR PATIENT IN DRG 89 (Simple Pneumonia and Pleurisy)

SPECIALTY OF ATTENDING PHYSICIAN	DRG 89
General and Family Practice	21.9%
Cardiology	14.6
Internal Medicine	15.2
Pulmonary Disease	32.2

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

specialists to perform procedures such as diagnostic bronchoscopy or to manage ventilator therapy. In some of these cases, it might be more appropriate to consider the second physician's services as concurrent care rather than as consultative services.

6.0 ANALYSIS OF CONSULTS AND VISITS WITH HIP/FEMUR PROCEDURE DRGs

The final group of DRGs selected for closer analysis includes:

210 - Hip and femur procedures except major joint, age greater than 69 and/or complications and/or comorbidities;

211 - Hip and femur procedures except major joint, age 18-69 without complications or comorbidities.

We chose these two DRGs so that we could include a surgical procedure in our study. Hip and femur procedures are some of the most common surgical procedures under Medicare. As was the case with pneumonia patients, Medicare beneficiaries undergoing these procedures are placed in different DRGs, based upon age and the presence or absence of complications.

6.1 Description of Diseases in DRGs 210 and 211

The vast majority of the procedures in these two DRGs are repairs of fractures of the femur or hip. All procedures in these two DRGs are performed in the operating room. Many patients, especially older patients with hip fractures, will require the insertion of pins, nails, screws, or plates to stabilize the bone fragments and allow proper healing. If a fractured hip cannot be properly aligned and stabilized by these methods, total hip replacement will usually be performed. (Total hip replacements are not included in these DRGs.)

For payors other than Medicare, some patients with hip and femur fractures will be young, relatively healthy adults who have experienced significant trauma such as a skiing or motor vehicle accident. For Medicare, the typical patient with a hip or femur fracture is an older woman with osteoporosis who has suffered a fall, often a relatively minor one. Many post-menopausal women experience severe osteoporosis as they age, and are thus predisposed to fractures from even minor trauma.

Early and potentially fatal complications of hip and femur fractures include fat embolus, and venous thrombosis and embolus. Fat from the disrupted bone marrow may travel in the bloodstream and lodge in the lungs,

seriously compromising oxygenation and affecting cardiac and mental function. Blood clots (venous thromboses) may form, especially in the legs, because of immobilization after surgery, with effects similar to those of fat emboli. Prevention of these complications requires emergency surgery following such fractures, prophylactic measures against blood clot formation in the legs, and a return to ambulatory status as soon as possible. Late complications of such fractures include poor bone healing, which may require further surgery, and occasionally a deep-seated bone infection that is difficult to eradicate.

Consults for Medicare patients with hip and femur fractures will most often be directed to management of underlying chronic medical disease (such as heart disease, hypertension, diabetes and pulmonary disease) during the peri-operative and post-operative periods.

6.2 Distribution of Discharges in DRGs 210 and 211 by Patient and Hospital Characteristics

Table 6-1 shows the distribution of discharges in these two DRGs by patient and hospital characteristics. Patients with hip and femur fractures are considerably older than patients with acute MIs or with pneumonia. As expected, patients in DRG 210 are also much older (mean age 81.0) than those in DRG 211 (mean age 63.0). Patients in DRG 210 also had longer lengths of stay, and received more visits and consults per discharge ($p < 0.0001$ for each test). It is also interesting to note that patients in DRGs 210 and 211 received significantly more consults per discharge (1.12 for both DRGs) than did patients in either of the other two groups of DRGs we studied (mean consults per discharge = 0.65 for DRGs 121, 122, and 123, and 0.50 for DRGs 89 and 90). This difference may be related to the greater age of patients in DRGs 210 and 211, or possibly to the need for more cross-specialty evaluation and management for these elderly surgical patients who frequently have chronic medical problems as well. (Unlike these patients, patients with pneumonia or acute MIs almost never undergo major surgery with general anesthesia.)

TABLE 6-1

CHARACTERISTICS OF PATIENTS IN DRGs 210 AND 211

	DRG 210	DRG 211	Both DRGs
Mean Age (Years)	81.0	63.0	80.1
Mean Length of Stay (Days)	14.6	11.7	14.5
Mean Number of Consults	1.15	0.61	1.12
Mean Number of Visits	7.32	4.26	7.17
Sex			
Male	21.8%	36.3%	22.5%
Female	78.2	63.7	77.5
	100.0%	100.0%	100.0%
Aged	97.1	72.8	95.8
Disabled	2.4	26.1	3.6
Chronic Renal Failure	0.5	1.1	0.6
	100.0	100.0	100.0
Teaching Hospitals	30.5	35.9	30.7
Non-Teaching Hospitals	69.5	64.1	69.3
	100.0	100.0	100.0
Urban/Rural Status			
Rural Areas	21.5	22.2	21.5
Cities under 250,000	16.1	17.6	16.2
Cities between 250,000 and 1,000,000	28.5	29.6	28.5
Cities over 1,000,000	33.9	30.6	33.8
	100.0	100.0	100.0

*DRG 210 - Age greater than 69 and/or c.c.
DRG 211 - Age 18-96 without c.c.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Survey of Hospitals.

The majority of patients with hip and femur fractures in each DRG were women. However, men were disproportionately represented in DRG 210 (over age 69 and/or with complications) (Chi-square significant at $p = 0.0001$). Although most patients, regardless of reason for eligibility, were in DRG 210, the disabled were again disproportionately represented among the younger, uncomplicated patients (DRG 211) ($p = 0.0001$). In contrast to pneumonia patients, younger and uncomplicated patients in these two DRGs were no more likely to be hospitalized in urban areas or in teaching hospitals than were older or more complicated patients.

6.3 Distribution of Physician Consults and Visits in DRGs 210 and 211 by Patient and Hospital Characteristics

Table 6-2 shows the visit and consult rates per discharge for each of the demographic and hospital categories used to describe the discharges in Table 6-1. Men in DRG 210 received more consults and more visits than did women ($p < 0.0005$); differences for men and women in DRG 211 were not significant. There were again too few patients with chronic renal failure in these DRGs to permit comparisons with the aged and disabled. Differences in consult and visit rates between the aged and disabled were not significant for DRGs 210 or 211.

Older and/or complicated patients with hip and femur fractures (DRG 210) had more visits and consults if they were treated in teaching hospitals ($p < 0.0005$). Differences in visit and consult rates in teaching vs. nonteaching hospitals were not significantly different for younger, uncomplicated patients (DRG 211). In general, higher visit and consult rates were associated with urban status and larger SMAs; these associations were significant only for DRG 210.

TABLE 6-2

CONSULT AND VISIT RATES (PER DISCHARGE) BY PATIENT AND HOSPITAL CHARACTERISTICS FOR DRGs 210 AND 211

	CONSULTS			VISITS		
	DRG 210	DRG 211	Both DRGs	DRG 210	DRG 211	Both DRGs
Sex						
Male	1.45	0.67	1.38	8.27	3.49	7.88
Female	1.07	0.58	1.05	7.06	4.70	6.96
Aged	1.15	0.69	1.13	7.31	4.55	7.20
Disabled	0.92	0.42	0.74	6.22	3.45	5.22
Chronic Renal Failure*	----	----	----	----	----	----
Teaching Hospitals	1.34	0.58	1.29	8.03	4.42	7.82
Non-Teaching Hospitals	1.07	0.63	0.98	7.01	4.17	6.43
Urban/Rural Status						
Rural Areas	0.96	0.48	0.93	5.33	3.84	5.26
Cities under 250,000	0.93	0.42	0.91	6.64	4.00	6.49
Cities between 250,000 and 1,000,000	1.07	0.65	1.05	7.92	4.39	7.73
Cities over 1,000,000	1.45	0.78	1.42	8.42	4.59	8.24

---

*DRG 89 - Age greater than 69 and/or c.c.
DRG 90 - Age 18-69 without c.c.

**Blank cells indicate fewer than 50 patients.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files, and American Hospital Association 1986 Hospital Survey.

6.4 Distribution of Physician Consults and Visits by Geographic Region

Table 6.3 shows that the Northeast region again tended to have higher consult rates per admissions than did other regions. For DRG 210, the consult rate in the Northeast (1.63 consults per admission) is nearly twice that of the region with the lowest rate (North Central, with 0.80 consults per admission). For DRG 211 (primarily repairs of hip and femur fractures in younger patients without complications), consult rates were lower, but substantial variation in rates between regions persisted: consult rates in the Northeast and in the South were more than twice the consult rate in the West (0.70 and 0.72 vs. 0.34 consults per admission).

As with the other two groups of DRGs, the Northeast had higher rates of visits per admission for patients in DRGs 210 and 211 than did other regions of the country. (Table 6.4) For DRG 210, the interregional differences in visit rates are similar in magnitude to differences for other DRGs. For DRG 211, however, there is an extremely large difference in visit rates between the Northeast (6.30 visits per admission) and the West (1.80 visits). It should be noted, however, that DRG 211 contained the lowest number of cases of the seven DRGs studied (281 admissions in all), and that interregional differences based on such a small sample are likely to reflect larger errors in estimates of population means.

6.5 Distribution of Physician Consults in DRGs 210 and 211 by Inpatient Day

Figure 6-1 shows, for both DRGs, the number of consults performed per day per hospitalized patient. The concentration of consults in the first few days of hospitalization is even more apparent for DRGs 210 and 211 than it was with the two previously studied groups of DRGs. (Compare Figures 4-1 and 5-1.) More than 25 percent of patients in DRG 210 receive a consult on the first hospital day, and another 20 percent have consults on the second day. From day six onward, only about three consults are performed each day for every hundred patients still hospitalized in these DRGs. As with AMI and

TABLE 6-3

CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 210 AND 211

	DRG 210	DRG 211	Both DRGs
Northeast	1.63	0.70	1.60
North Central	0.80	0.62	0.79
South	1.34	0.72	1.30
West	0.85	0.34	0.83

Source: 1986 MEDPAR and BMAD 5% Beneficiary File.

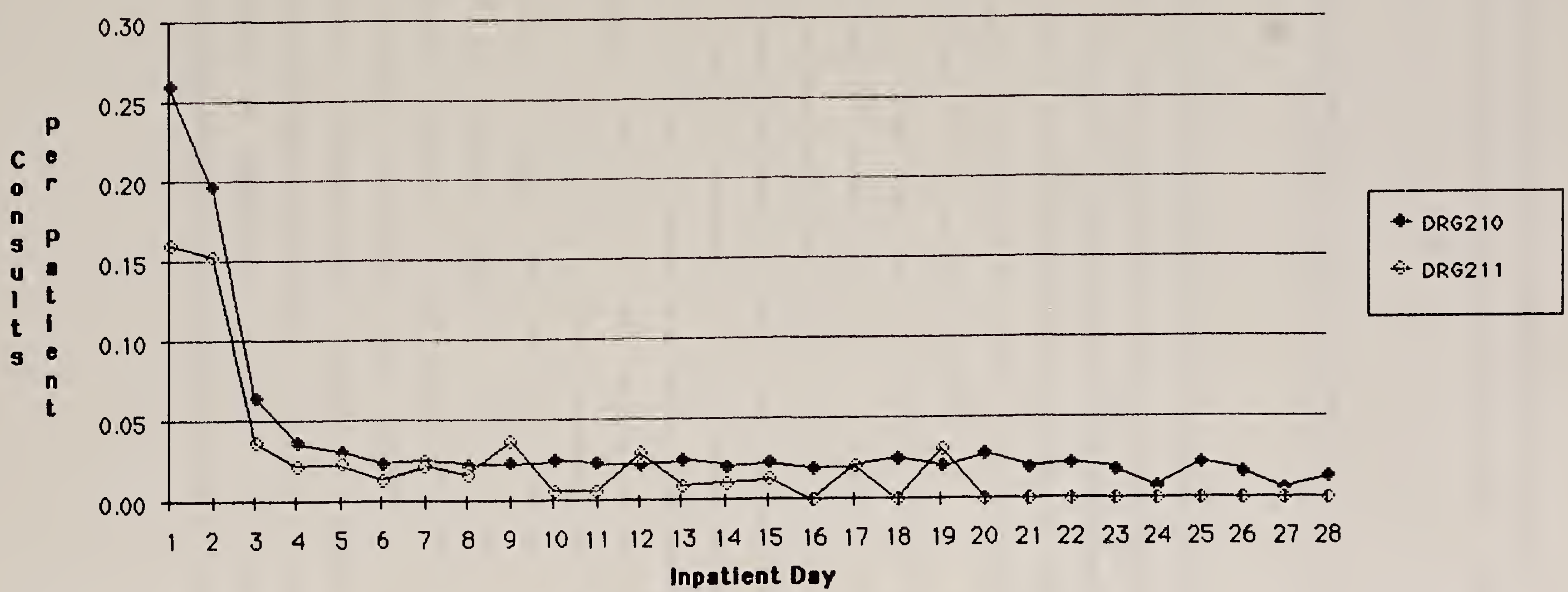
TABLE 6-4

VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR DRGs 210 and 211

	DRG 210	DRG 211	Both DRGs
Northeast	8.82	6.30	8.72
North Central	7.84	5.02	7.69
South	6.24	3.94	6.11
West	6.46	1.80	6.23

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

Figure 6-1. Consults Per Patient
By Inpatient Day and By DRG
For Patients with Hip & Femur Procedures



DRG 210 - age greater than 69 and/or CC
DRG 211 - age 18-69 without CC

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files

pneumonia patients, older and/or more complicated patients with hip and femur fractures receive more consults per day than do younger, uncomplicated patients.

6.6 Distribution of Physician Consults in DRGs 210 and 211 by Physician Specialty

Table 6-5 lists the ten physician specialties which provided the largest number of inpatient consults for patients with hip and femur fractures. Over 41 percent of all consults for these patients were performed by internists. These consults were most likely requested by surgeons to assess the patients' risk factors for general anesthesia and surgery, or to evaluate and manage chronic medical problems before and after surgery.

The second most frequently consulted specialty was orthopedic surgery. As we did in the other two groups of DRGs, we attempted to examine whether routine or concurrent care was being billed as consultation. We again assumed that the physician providing the most visits was the attending physician. Three specialties showed up frequently as attending physicians for patients with hip and femur fractures: general and family practitioners, internists, and orthopedic surgeons (Table 6-6). When consults to orthopedic surgery were viewed in relation to the specialty of the attending physician, it was apparent that orthopedic surgeons, when acting as attendings, are very unlikely to request an orthopedic consult. (Only 1.8 percent of consults were performed by orthopedic surgeons, when these surgeons were also the attending physicians.) For patients with hip and femur fractures, orthopedic consults are requested much more frequently when internists or general and family practitioners are the attending physicians (i.e., the physicians who billed the most visits during the admission). For these DRGs, then, it seems very unlikely that orthopedic surgeons are billing routine or concurrent care as consultations.

TABLE 6-5

SPECIALTIES OF PHYSICIANS PROVIDING CONSULTS TO PATIENTS IN DRGs 210 AND 211 (Hip and Femur Procedures)

1.	Internal Medicine	41.5%
2.	Orthopedic Surgery	13.4
3.	Cardiovascular Disease	9.1
4.	General and Family Practice	6.8
5.	Clinic or Other Group Practice	5.2
6.	Urology	4.0
7.	General Surgery	3.7
8.	Pulmonary Disease	3.6
9.	Neurology	2.8
10.	Physical Medicine and Rehabilitation	2.5

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

TABLE 6-6

ORTHOPEDIC CONSULTS (AS PERCENT OF ALL CONSULTS) BY SPECIALTY OF ATTENDING PHYSICIANS FOR PATIENTS IN DRG 210 (Hip and Femur Procedures)

SPECIALTY OF ATTENDING PHYSICIAN	DRG 210
General and Family Practice	17.8%
Internal Medicine	9.4
Orthopedics	1.8

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

7.0 EVIDENCE FOR SUBSTITUTION OF PHYSICIAN CONSULTS FOR VISITS

One of the greatest concerns for payers regarding physician consultations is whether physicians may be submitting claims for consults when the services delivered were actually routine or concurrent patient care (billable as visits, rather than as consults). Table 7-1 shows that, for ten frequently consulted physician specialties, there is a substantial increase in reimbursement if an inpatient visit is billed as a consult. The increase in reimbursement that could be realized through such a change in billing ranges from 9 to 49 percent.

Although only detailed examination of medical records and comparison with submitted claims can answer this question definitively, we attempted to probe our data for any evidence for or against the hypothesis that physicians frequently substitute consult claims for visit claims. Our examination of this question was conducted on several levels.

In Section 3.2, we obtained correlation coefficients between utilization rates (per 100,000 Medicare beneficiaries) for physician visits and consults in various locations. (The coefficients are shown in Table 3-2.) When data for 51 Medicare carriers were examined, the inpatient consult rate showed a moderately positive correlation with the inpatient visit rate (r = 0.44). The correlation between these two rates was higher for carriers in the North Central region (r = 0.88) and in the West (r = 0.78). (For carriers in the other two regions of the country, the correlation coefficient between consult and visit rates was also positive, but was not significant.) This seems to indicate that the carrier-specific utilization rates for both consults and visits are crude measures of the intensity of utilization of medical services.

These correlations do not, however, give us any indication that there is widespread substitution of physician consults for physician visits. If this had been the case, at the carrier level we might have expected (as a result of differences in physician practices and carrier policies) that there might have been a negative correlation between consult and visit rates: those carriers with the highest consult rates ought to have lower visit rates.

TABLE 7-1

MEAN REIMBURSEMENT FOR INPATIENT CONSULTS AND HOSPITAL VISITS OF COMPARABLE TYPE AND LEVEL OF COMPLEXITY, BY PHYSICIAN SPECIALTY

	TYPE AND LEVEL (CPT-4 CODE)					
Physician Specialty	Initial Comprehensive Hospital Visit 90220	Initial Comprehensive Consult 90620	Percent Difference	Intermediate Subsequent Hospital Visit 90260	Intermediate Follow-Up Consult 90642	Percent Difference
General and Family Practice	$55.72	$69.45	24.6%	$20.85	$27.89	33.8%
Surgery	60.37	74.80	23.9%	23.38	29.08	24.4%
Cardiology	82.54	90.71	9.9%	30.05	30.69	2.1%
Gastroenterology	75.79	89.00	17.4%	27.94	33.52	20.0%
Internal Medicine	74.16	86.29	16.4%	26.38	33.18	25.8%
Neurology	84.23	91.80	9.0%	29.51	30.48	3.3%
Orthopedic Surgery	63.36	71.28	12.5%	24.93	28.09	12.7%
Pulmonary Medicine	79.55	94.12	18.3%	29.64	38.71	30.6%
Urology	57.78	72.20	25.0%	24.96	29.52	18.3%
Group Practice	72.79	81.13	11.5%	27.80	38.47	38.4%

Source: 1986 MedPAR and BMAD 5% Beneficiary Files, and American Medical Association, Physicians' Current Procedural Terminology (Chicago: 1985).

In analyzing consult and visit data for three separate groups of DRGs (acute MIs, simple pneumonia, and pleurisy, and hip and femur fractures), we undertook two additional levels of analysis of consult/visit substitution. First, using the individual discharge as the unit of analysis, we correlated the rates of consults and visits per discharge within each of the three DRG groups. The correlation coefficients (presented in Table 7-2) are low and do not demonstrate any strong association between the number of consults and the number of visits per discharge. A highly negative correlation coefficient would have indicated that, at the discharge level, the number of visits varies inversely with the number of consults provided to a patient, and would be strong evidence of substitution. The actual results obtained provide no strong evidence for or against such substitution.

Secondly, in analyzing data for these three groups of DRGs, we developed consult and visit rates per discharge by geographic region. These results were presented previously in Chapters 4, 5, and 6. The Northeast region had the highest consult rate and the highest visit rate per discharge for all three DRG groups. The North Central region, on the other hand, had the lowest rate of consults per discharge but the second highest visit rates (after the Northeast) for all three DRG groups. Differences in consult and visit rates between the remaining two regions showed no consistent pattern. These results suggest several possible explanations. First, it is known that the patients hospitalized in the Northeast typically have longer lengths of stay than do patients in other regions of the country. Longer average length of stay could explain both the higher consult and the higher visit rates seen in the Northeast. Second, the low consult rate and relatively high visit rate observed in the North Central region may reflect some degree of substitution of visits for consults, which may in turn be a reflection of carrier policies limiting the number of consults billed by a provider or provided to a patient.

In summary, our analysis showed no strong evidence of physician substitution of consult claims for visit claims. The most conclusive evidence of the extent of this practice would best be obtained from a detailed comparison of a sufficient sample of physician claims and medical records.

TABLE 7-2

CORRELATIONS BETWEEN INPATIENT CONSULTS AND INPATIENT VISITS AT CARRIER AND DISCHARGE LEVELS, FOR SELECTED DRGs

DRG Group	**Discharge Level**
Pneumonia and Pleurisy (89 and 90)	0.13*
Acute Myocardial Infarction (121, 122, and 123)	0.13*
Hip and Femur Procedures (210 and 211)	0.02[a]

*p = 0.0001

[a] not significant.

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

TABLE 7-3

CONSULTS PER DISCHARGE BY GEOGRAPHIC REGION FOR SELECTED DRGs

	DRGs		
	DRGs 89 and 90	121,122 and 123	DRGs 210 and 211
Northeast	0.72	0.90	1.60
North Central	0.36	0.53	0.79
South	0.44	0.62	1.30
West	0.69	0.60	0.83

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

TABLE 7-4

VISITS PER DISCHARGE BY GEOGRAPHIC REGION FOR SELECTED DRGs

	DRGs		
	DRGs 89 and 90	121,122 and 123	DRGs 210 and 211
Northeast	9.90	9.03	8.72
North Central	8.37	7.44	7.69
South	7.73	6.06	6.11
West	8.05	6.85	6.23

Source: 1986 MEDPAR and BMAD 5% Beneficiary Files.

8.0 MULTIVARIATE ANALYSIS OF GEOGRAPHIC DIFFERENCES IN CONSULT RATES

One of the most noteworthy findings in our descriptive analysis of physician consults was that consult rates were higher in the Northeast for all three groups of DRGs studied. We decided to perform a multivariate analysis for each of the three groups of DRGs to determine whether the higher consult rates in the Northeast would be eliminated once other factors were controlled (e.g., patient- and DRG-specific factors, hospital characteristics, local area characteristics, physician supply, and hospital length of stay).

8.1 Data Sources and File Construction

For this analysis, we used the same data files that served as the basis for our descriptive analyses in Sections 4.0 through 6.0. A full description of these files is contained in Section 2.0. Briefly summarized, these files are merged Part A-Part B admission-level records for a 1986 5 percent sample of beneficiaries, in three groups of DRGS (simple pneumonia and pleurisy, acute myocardial infarctions, and hip and femur procedures). Data on hospital characteristics were added to each admission-level record by matching hospital identification numbers against data from the American Hospital Association's 1986 Annual Survey of Hospitals. Finally, the number of non-federal patient care physicians per capita in the beneficiary's county of residence was obtained from the 1986 Area Resource File.

8.2 Analysis Technique

8.2.1 Dependent Variable

If only patients with consults are considered, the mean number of consults per admission was still less than two, in each of the three DRG groups. We decided, therefore, that it would be more interesting to elucidate the factors determining whether any consults were performed, rather than

examining factors related to how many consults were received during an admission. The dependent variable, then, became 0 (if no consults were performed during an admission) or 1 (if one or more consults were performed). Since the dependent variable is constrained between values of 0 and 1, probit analysis is more appropriate than ordinary least-squares.

8.2.2 Independent Variables

Three dummy variables for the major regions of the country were included (the Northeast region is included in the intercept). We also included patient- and DRG-specific variables available from the Part A record (age, sex, race, basis of Medicare eligibility, and DRG placement based on age, comorbidities, and/or mortality). Next, we included hospital characteristics available from AHA survey data (teaching status, bedsize, and type of ownership). We then included two variables that describe the local area: whether the hospital is located in a rural area, or in a small, medium, or large metropolitan statistical area; and the number of non-federal patient care physicians per capita in the patient's county of residence, as a measure of physician supply. Finally, we included length of stay as an independent variable. Patients who are hospitalized longer are more likely to have consults for at least two reasons: first, complicated patients are more likely to have longer lengths of stay and to have consults to address those complications; second, even uncomplicated patients who are hospitalized longer may receive consults simply to address outstanding medical problems or needs, although these may be unrelated to the primary diagnosis. Since the average length of stay in the Northeast is longer, we felt it important to determine whether controlling for length of stay would decrease the observed differences in regional consult rates.

For each group of DRGs, we introduced our independent variables in a stepwise manner, since we were interested in finding out which group of factors contributed most strongly to regional differences in consult rates. Step one included only the dummy variables for region. Then, in four

successive steps, we added to the analysis groups of variables that might be expected to influence consult rates. The variables added in each step of the analysis are described in Table 8-1. Variables added in each step remained in the analysis in subsequent steps.

8.3 Results

Results of our analysis are reported in three tables (8-2, 8-3 and 8-4), one for each of the three DRG groups. Since probit coefficients are not easily interpreted, the results presented in these tables are the elasticities or marginal effects of the independent variables. Elasticities (for the continuous variables age, physicians per capita, and length of stay) show the estimated change in the dependent variable (the probability of at least one physician consult) when a given independent variable is increased to 10 percent above its mean, holding all other variables constant. Marginal effects for dummy variables show the absolute change in the probability of at least one consult when the dummy variable changes its value from 0 to 1, again holding the values of all other variables constant. For example, Table 8-3 shows in Step 5 that the probability of at least one consult decreased by 5.4 percent for patients with acute MIs hospitalized in the West, and by 4.7 percent for patients admitted to public hospitals.

Results are discussed at two levels. First, we will discuss the impact of each group of independent variables on regional differences in the probability of at least one consult during admission. Second, we will examine the impact of each independent variable in the final equation (Step 5).

8.3.1 Effect of Groups of Independent Variables

In each DRG group for Step 1, patients hospitalized in the Northeast were significantly more likely to have at least one physician consult than were patients in other regions (probability < 0.001 in all regions for all DRG groups).

TABLE 8-1

VARIABLE MEANS

Variable and Definition	DRG 89 & 90 Mean	DRG 121, 122, 123 Mean	DRG 210 & 211 Mean
REGION OF COUNTRY			
North Central	0.28	0.25	0.27
South	0.39	0.38	0.35
West	0.15	0.14	0.19
Northeast (omitted category)	0.18	0.23	0.19
PATIENT CHARACTERISITCS			
Age (Years)	76.79	74.47	80.10
Sex			
Male	0.49	0.52	0.23
Female (omitted category)	0.51	0.48	0.77
Race			
Nonwhite	0.08	0.07	0.05
White (omitted category)	0.92	0.93	0.95
Basis of Eligibility			
Disabled	0.07	0.07	0.04
Chronic Renal Failure	0.01	0.01	0.01
Aged (omited category)	0.92	0.92	0.95
DRG CHARACTERISTICS			
Simple Pneumonia & Pleurisy			
89 - Age >69 and/or CC	0.96		
90 - Age 18-69 w/o CC (omitted category)	0.04		
Acute Myocardial Infarction			
121 - w CV Compl., Disch. Alive		0.38	
123 - Expired		0.21	
122 - w/o CV Compl., Disch. Alive (omitted category)		0.41	
Hip & Femur Procedures			
210 - Age >69 and/or CC			0.95
211 - Age 18-69 w/o CC (omitted category)			0.05

TABLE 8-1 (continued)

VARIABLE MEANS

Variable and Definition	DRG 89 & 90 Mean	DRG 121, 122, 123 Mean	DRG 210 & 211 Mean
HOSPITAL CHARACTERISTICS			
Teaching Status			
Resident/Beds > 0	0.03	0.04	0.04
Resident/Beds = 0 (omitted category)	0.97	0.96	0.96
Bedsize			
less than 100	0.27	0.20	0.13
100 to 199	0.23	0.21	0.22
200 to 299	0.18	0.20	0.21
300 to 399	0.13	0.16	0.18
more than 500	0.11	0.13	0.16
400 to 499 (omitted category)	0.08	0.10	0.10
Ownership			
Proprietary	0.10	0.09	0.09
Public	0.21	0.17	0.15
Nonprofit (omitted category)	0.69	0.74	0.76
LOCAL AREA CHARACTERISTICS			
MSA Size			
Rural (non-MSA)	0.36	0.30	0.22
Small MSA (under 250,000 pop.)	0.12	0.14	0.16
Large MSA (over 1,000,000 pop.)	0.28	0.31	0.33
Medium MSA (250,000 to 1,000,000 pop) (omitted category)	0.24	0.25	0.29
Non-federal Patient Care Physicians Per 100 Population in Beneficiary's County of Residence	0.17	0.18	0.19
Length of Stay (Days)	8.85	8.73	14.35

Source: 1986 MEDPAR and 1986 BMAD 5% Beneficiary Files, American Hospital Association's 1986 Annual Survey of Hospitals, and 1986 Area Resource File

TABLE 8-2

ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR SIMPLE PNEUMONIA AND PLEURISY (DRGs 89 and 90)

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
REGION OF COUNTRY					
North Central	-0.116[a]	-0.116[a]	-0.085[a]	-0.070[a]	-0.050[a]
South	-0.117[a]	-0.120[a]	-0.084[a]	-0.057[a]	-0.041[a]
West	-0.054[a]	-0.057[a]	-0.026[b]	-0.042[a]	-0.011
PATIENT CHARACTERISITCS					
Age	---	-0.084[a]	-0.083[a]	-0.092[a]	-0.108[a]
Sex					
Male	---	0.028[a]	0.032[a]	0.036[a]	0.041[a]
Race					
Nonwhite	---	0.052[a]	0.037[b]	0.023	0.012
Basis of Eligibility					
Disabled	---	-0.049[b]	-0.049[b]	-0.052[b]	-0.057[a]
Chronic Renal Failure	---	0.109[a]	0.059	0.050	0.045
DRG CHARACTERISTICS					
Simple Pneumonia & Pleurisy					
89 - Age >69 and/or CC	---	0.103[a]	0.092[a]	0.093[a]	0.065[a]
HOSPITAL CHARACTERISTICS					
Teaching Hospital	---	---	0.001	-0.001	0.000
Bedsize					
less than 100	---	---	-0.196[a]	-0.112[a]	-0.089[a]
100 to 199	---	---	-0.084[a]	-0.027	-0.014
200 to 299	---	---	-0.018	0.013	0.016
300 to 399	---	---	-0.002	0.011	0.017
more than 500	---	---	-0.008	-0.009	-0.008
Ownership					
Proprietary	---	---	0.057[a]	0.030[c]	0.035[b]
Public	---	---	-0.053[a]	-0.038[a]	-0.036[a]
LOCAL AREA CHARACTERISITCS					
MSA Size					
Rural (non-MSA)	---	---	---	-0.117[a]	-0.114[a]
Small MSA	---	---	---	-0.049[a]	-0.044[a]
Large MSA	---	---	---	0.040[a]	0.038[a]
Patient Care Physicians per Capita	---	---	---	0.009[a]	0.010[a]
LENGTH OF STAY	---	---	---	---	0.055[a]
INTERCEPT	0.246[a]	0.244	0.231	0.227	0.221[c]
NO.	16,469	16,469	16,469	16,469	16,469

(1) Elasticities for continuous variables are calculated assuming a 10-percent increase from the mean value. Marginal effects of dummy variables show the absolute change in the probability of at least one consult when the value of the variable is changed from 0 to 1.

[a] Statistically significant at 0.001 level.

[b] Statistically significant at 0.01 level.

[c] Statistically significant at 0.05 level.

Source: 1986 MEDPAR and 1986 BMAD 5% Beneficiary Files, American Hospital Association's 1986 Annual Survey of Hospitals, and 1986 Area Resource File.

TABLE 8-3

ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR ACUTE MI (DRGs 121, 122, and 123)

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
REGION OF COUNTRY					
North Central	-0.076[a]	-0.075[a]	-0.045[a]	-0.038[b]	-0.025[c]
South	-0.100[a]	-0.099[a]	-0.081[a]	-0.063[a]	-0.050[a]
West	-0.082[a]	-0.083[a]	-0.063[a]	-0.083[a]	-0.054[a]
PATIENT CHARACTERISTICS					
Age	---	-0.008	-0.003	-0.005	-0.018
Sex					
Male	---	0.007	0.012	0.014	0.022[c]
Race					
Nonwhite	---	0.021	0.026	0.015	0.007
Basis of Eligibility					
Disabled	---	-0.021	-0.023	-0.018	-0.022
Chronic Renal Failure	---	0.193[a]	0.171[a]	0.169[a]	0.167[a]
DRG CHARACTERISTICS					
Acute Myocardial Infarction					
121-w CV Compl., Disch. Alive	---	0.050[a]	0.051[a]	0.052[a]	0.019[c]
123-Expired	---	0.053[a]	0.050[a]	0.050[a]	0.099[a]
HOSPITAL CHARACTERISTICS					
Teaching Hospital	---	---	-0.001[c]	-0.002[b]	-0.001[b]
Bedsize					
less than 100	---	---	-0.210[a]	-0.132[a]	-0.113[a]
100 to 199	---	---	-0.097[a]	-0.045[b]	-0.040[c]
200 to 299	---	---	-0.005	0.022	0.026
300 to 399	---	---	-0.001	0.009	0.005
more than 500	---	---	-0.010	-0.008	-0.012
Ownership					
Proprietary	---	---	0.083[a]	0.055[a]	0.062[a]
Public	---	---	-0.059[a]	-0.049[a]	-0.047[a]
LOCAL AREA CHARACTERISTICS					
MSA Size					
Rural (non-MSA)	---	---	---	-0.109[a]	-0.104[a]
Small MSA	---	---	---	-0.030[c]	-0.028[c]
Large MSA	---	---	---	0.057[a]	0.055[a]
Patient Care Physicians Per Capita	---	---	---	-0.002	-0.002
LENGTH OF STAY	---	---	---	---	0.033[a]
INTERCEPT	0.3631[a]	0.363[a]	0.357	0.328	0.373[c]
NO.	14,218	14,218	14,218	14,218	14,218

(1) Elasticities for continuous variables are calculated assuming a 10-percent increase from the mean value. Marginal effects of dummy variables show the absolute change in the probability of at least one consult when the value of the variable is changed from 0 to 1.

[a] Statistically significant at 0.001 level.

[b] Statistically significant at 0.01 level.

[c] Statistically significant at 0.05 level.

Source: 1986 MEDPAR and 1986 BMAD 5% Beneficiary Files, American Hospital Association's 1986 Annual Survey of Hospitals, and 1986 Area Resource File

TABLE 8-4

ELASTICITIES AND MARGINAL EFFECTS (1) OF INDEPENDENT VARIABLES ON THE PROBABILITY OF AT LEAST ONE PHYSICIAN CONSULTATION DURING ADMISSION FOR HIP & FEMUR PROCEDURES (DRGs 210 and 211)

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
REGION OF COUNTRY					
North Central	-0.173[a]	-0.173[a]	-0.161[a]	-0.159[a]	-0.143[a]
South	-0.091[a]	-0.090[a]	-0.083[a]	-0.071[a]	-0.058[b]
West	-0.233[a]	-0.236[a]	-0.225[a]	-0.238[a]	-0.215[a]
PATIENT CHARACTERISTICS					
Age	---	0.012	0.014	0.012	0.013
Sex					
Male	---	0.098[a]	0.099[a]	0.100[a]	0.095[a]
Race					
Nonwhite	---	0.038	0.030	0.024	0.011
Basis of Eligibility					
Disabled	---	-0.086	-0.080	-0.081	-0.079
Chronic Renal Failure	---	0.179	0.174	0.178	0.166
DRG CHARACTERISTICS					
Hip & Femur Procedures					
210 - Age >69 and/or CC		0.124[a]	0.125[a]	0.123[a]	0.111[b]
HOSPITAL CHARACTERISTICS					
Teaching Hospital	---	---	0.000	0.000	0.000
Bedsize					
less than 100	---	---	-0.115[a]	-0.079[c]	-0.077[c]
100 to 199	---	---	-0.065[c]	-0.040	-0.040
200 to 299	---	---	0.004	0.018	0.014
300 to 399	---	---	-0.006	0.005	0.005
more than 500	---	---	-0.033	-0.024	-0.024
Ownership					
Proprietary	---	---	0.051[c]	0.036	0.040
Public	---	---	-0.047[c]	-0.042[c]	-0.039
LOCAL AREA CHARACTERISTICS					
MSA Size					
Rural (non-MSA)	---	---	---	-0.024	-0.018
Small MSA	---	---	---	-0.010	-0.008
Large MSA	---	---	---	0.072[a]	0.071[a]
Patient Care Physicians Per Capita	---	---	---	-0.001	-0.001
LENGTH OF STAY	---	---	---	---	0.011[a]
INTERCEPT	0.527	0.527	0.527	0.527	0.528
NO.	5,540	5,540	5,540	5,540	5,540

(1) Elasticities for continuous variables are calculated assuming a 10-percent increase from the mean value. Marginal effects of dummy variables show the absolute change in the probability of at least one consult when the value of the variable is changed from 0 to 1.

[a] Statistically significant at 0.001 level.

[b] Statistically significant at 0.01 level.

[c] Statistically significant at 0.05 level.

Source: 1986 MEDPAR and 1986 BMAD 5% Beneficiary Files, American Hospital Association's 1986 Annual Survey of Hospitals, and 1986 Area Resource File.

In Step 2, we introduced patient- and DRG-specific characteristics. Our expectation was that patients who were older or who had comorbidities would be more likely to receive consults during hospital admissions. However, we were not aware of any data showing systematic differences in these variables between regions, and controlling for these factors should not have had much effect on our dependent variable. As expected, introduction of these factors did not appreciably diminish the magnitude of the differences between the Northeast and other regions.

In step 3, we included hospital characteristics in the analysis. We expected that teaching status and increased hospital size might be associated with higher likelihood of consults, and that such hospitals were more concentrated in the urban areas of the Northeast. Controlling for these factors noticeably decreased differences between the Northeast and other regions for two of the three DRG groups (acute MIs and pneumonia), but had a smaller effect on regional differences in the probability of consults for hip and femur procedures. However, regional differences for all three DRG groups remained statistically significant.

Local area characteristics (urban/rural status, MSA size, and physicians per capita) were introduced in step 4. It was hypothesized that consults would be more likely in large metropolitan areas and in areas with high physician density. These factors had a small effect in narrowing differences in consult rates between regions.

In the fifth and final step of our analysis, we controlled for the length of stay of each admission. We expected that longer lengths of stay would be associated with higher probabilities of having consults. Since patients in the Northeast have longer lengths of stay than patients in other regions of the country, we expected that controlling for length of stay would eliminate much of the regional differences in consult rates. However, controlling for length of stay resulted in only a slight narrowing of regional differences, and the probability of receiving at least one consult remained significantly higher in the Northeast for all three DRGs, with a single exception: for patients with simple pneumonia and pleurisy (DRGs 89 and 90),

there was no significant difference between consult probabilities for the West and the Northeast after controlling for length of stay.

8.3.2 Effect of Individual Independent Variables

In Step 5 of the probit analysis for each DRG group, geographic region remained significantly related to the probability of having a consult during a hospital admission. Males in all three groups were more likely to receive consults than were females. There was no consistent association between age, race, or basis of Medicare eligibility and the probability of consults. However, DRG placement (based on age, comorbidities, and mortality) did have the expected effect - patients who were older and/or sicker were more likely to have consults.

Teaching status was significant only for patients with acute MIs, and its contribution in that DRG group was marginal. Hospital bedsize was significant in only one respect: patients in hospitals with less than 100 beds were significantly less likely to receive consults in all three DRG groups. For two of the three groups (pneumonia and acute MI), hospital ownership was significantly related to the probability of consults. Patients admitted to proprietary hospitals were more likely to have consults than were patients in nonprofit hospitals (intercept). Patients admitted to public hospitals were less likely to have consults, by a similar magnitude of difference. For the third DRG group (hip and femur procedures), the differences between for-profit, nonprofit, and public hospitals were of similar direction and magnitude, but the results were not significant.

Results for local area characteristics were inconsistent. The only significant finding in all three DRG groups was the increased probability of consults in large metropolitan statistical areas (cities with more than 1,000,000 population). However, two of the three DRG groups (pneumonia and acute MIs) showed that patients in rural areas and small cities were less likely to receive consults than were patients in medium cities (intercept). The direction of the differences were similar in the third DRG group, but

these differences were not significant. Physicians per capita was significant in only one DRG group, and its contribution there was small.

Longer lengths of stay were associated with increased likelihood of at least one consult in all three DRG groups, and this result was expected.

8.4 Discussion

Patients in three DRG groups admitted to hospitals in the Northeast were found to have a significantly higher probability of receiving a consult during admission than patients in the other three regions of the U.S. Even after controlling for various factors which might be expected to affect the rate of physician consults (including patient- and DRG-specific factors, hospital characteristics, local area characteristics, and physician supply), these regional differences persisted and were highly significant in almost all instances. It is significant that these regional differences persisted even after controlling for length of stay, which is also known to vary by region and to be longest in the Northeast.

One possible explanation for such differences might be that physicians in the Northeast are substituting hospital consults for hospital visits, and that this practice occurs more frequently in the Northeast than in other regions of the country. However, this possibility seems to be excluded by our previous finding (see Section 7.0) that the Northeast had the highest rate of visits per admission as well as the highest rate of consults per admission.

Another possible explanation for our findings might be imperfect specification of independent variables, such as hospital teaching status. For example, we defined a teaching hospital as any hospital with a ratio of residents to beds greater than zero. Such a definition does not distinguish between major and minor teaching hospitals. If major teaching hospitals are concentrated in the Northeast, it is possible that use of a more refined measure of teaching activity in our analysis would have further decreased the apparent differences in consult rates between the Northeast and other regions of the country.

It is also possible that other factors not considered in our study may be influencing regional consult rates. For example, it is possible that carrier policies (or enforcement of such policies) regarding physician consults may be less strict in the Northeast than in other regions. Further study of these regional differences in consult rates is indicated. Such studies might include analysis of carrier policies regarding consultation services and random sampling of hospital records of Medicare patients to assess physician compliance with carrier policies.

REFERENCES

Mitchell J.B., G. Wedig, and J. Cromwell, "The Medicare Physician Fee Freeze: What Really Happened?," Health Affairs, 8:1, Spring 1989, pp. 21-33.

Office of the Inspector General, Dept. of Health and Human Services. Medicare Physician Consultation Services. June, 1988, p. i.

APPENDIX A

2152H/43H

APPENDIX A-1

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
1	Craniotomy without trauma, age > 17
2	Craniotomy with trauma, age > 17
3	Craniotomy, age < 18
4	Spinal procedures
5	Extracranial vascular procedures
6	Carpal tunnel release
7	Peripheral/cranial nerve and other nervous system procedures, age > 69 and/or C.C.
8	Peripheral/cranial nerve and other nervous system procedures, age < 70 without C.C.
9	Spinal disorders and injuries
10	Nervous system neoplasms, age > 69 and/or C.C.
11	Nervous system neoplasms, age < 70 without C.C.
12	Degenerative nervous system disorders
13	Multiple sclerosis and cerebellar ataxia
14	Specific cerebrovascular disorders except TIA
15	Transient ischemic attack & pre-cerebral occlusion
16	Nonspecific cerebrovascular disorders except TIA
17	Nonspecific cerebrovascular disorders without C.C.
18	Cranial and peripheral nerve disorders, age > 69 and/or C.C.
19	Cranial and peripheral nerve disorders, age < 70 without C.C.
20	Nervous system infection except viral meningitis
21	Viral meningitis
22	Hypertensive encephalopathy
23	Nontraumatic stupor and coma
24	Seizure and headache, age > 69 and/or C.C.
25	Seizure and headache, age 18-69 without C.C.
26	Seizure and headache, age 0-17
27	Traumatic stupor and coma, coma greater than one hour
28	Traumatic stupor and coma, coma less than one hour, age > 69 and/or C.C.
29	Traumatic stupor and coma, coma less than one hour, age 18-59 without C.C.
30	Traumatic stupor and coma, coma less than one hour, age 0-17
31	Concussion, age > 69 and/or C.C.
32	Concussion, age 18-69 without C.C.
33	Concussion, age 0-17
34	Other disorders of nervous system, age > 69 and/or C.C.
35	Other disorders of nervous system, age < 70 without C.C.
36	Retinal procedures
37	Orbital procedures
38	Primary iris procedures
39	Lens procedures with or without vitrectomy
40	Extraocular procedures except orbit, age > 17
41	Extraocular procedures except orbit, age 0-17
42	Intraocular procedures except retina, iris and lens
43	Hyphema
44	Acute major eye infections
45	Neurological eye disorders
46	Other disorders of the eye, age > 17 with C.C.
47	Other disorders of the eye, age > 17 without C.C.
48	Other disorders of the eye, age 0-17
49	Major head and neck procedures
50	Sialoadenectomy
51	Salivary gland procedures except sialoadenectomy

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
1	1,174	19.3	0.1	0.5	1.5	9.4	1,784	10,977
2	265	17.8	0.1	0.5	1.4	8.1	360	2,157
3	0	0.0	0.0	0.0	0.0	0.0	0	0
4	233	17.5	0.1	0.4	1.4	7.7	329	1,796
5	2,407	8.1	0.1	0.6	0.9	4.7	2,214	11,265
6	180	2.6	0.1	0.6	0.4	1.4	67	257
7	378	18.1	0.1	0.5	1.2	8.7	469	3,285
8	140	5.4	0.1	0.5	0.3	2.5	42	349
9	153	16.8	0.1	0.6	1.0	10.8	151	1,648
10	1,003	10.5	0.1	0.8	1.0	8.7	983	8,716
11	94	7.3	0.1	0.9	0.9	6.2	81	587
12	1,799	13.2	0.1	0.7	0.9	9.8	1,619	17,666
13	300	10.9	0.1	0.8	1.0	8.5	294	2,535
14	16,025	11.2	0.1	0.8	0.9	9.2	13,782	146,949
15	8,120	5.5	0.1	1.0	0.6	5.4	4,953	43,442
16	781	9.1	0.1	0.9	0.9	8.1	672	6,326
17	454	6.9	0.1	0.9	0.7	6.4	304	2,892
18	960	8.2	0.1	0.9	1.0	7.7	970	7,402
19	238	6.6	0.1	0.8	0.8	5.3	190	1,252
20	311	11.9	0.1	0.8	1.1	9.3	333	2,899
21	35	11.6	0.2	0.8	2.2	9.6	77	337
22	731	5.7	0.1	0.9	0.5	5.3	373	3,896
23	248	7.0	0.1	0.9	0.5	6.5	134	1,614
24	3,024	6.7	0.1	0.9	0.7	6.0	2,056	18,174
25	759	4.3	0.1	0.9	0.5	4.1	342	3,074
26	7	4.6	0.1	0.3	0.4	1.6	3	11
27	126	10.7	0.1	0.8	1.1	8.0	139	1,013
28	578	7.6	0.1	0.8	0.9	5.9	526	3,433
29	62	4.5	0.1	0.7	0.3	3.4	17	208
30	0	0.0	0.0	0.0	0.0	0.0	0	0
31	513	5.1	0.1	0.9	0.5	4.7	236	2,406
32	88	3.1	0.1	0.9	0.4	2.8	34	243
33	0	0.0	0.0	0.0	0.0	0.0	0	0
34	742	8.6	0.1	0.9	1.0	7.7	705	5,699
35	114	5.5	0.1	0.7	0.8	4.0	90	456
36	1,041	3.6	0.1	0.3	0.5	1.0	468	989
37	168	4.1	0.1	0.4	0.4	1.6	71	272
38	78	4.0	0.2	0.4	0.6	1.6	47	124
39	2,534	2.0	0.1	0.3	0.2	0.7	532	1,672
40	348	2.9	0.1	0.4	0.4	1.1	125	386
41	0	0.0	0.0	0.0	0.0	0.0	0	0
42	1,341	3.1	0.1	0.3	0.3	0.8	349	1,046
43	17	5.1	0.2	1.0	0.9	4.9	15	83
44	131	6.3	0.1	0.9	0.4	5.5	54	717
45	206	4.6	0.2	1.1	0.9	5.2	190	1,067
46	218	6.0	0.1	0.8	0.8	4.9	181	1,057
47	229	3.6	0.1	0.8	0.4	3.0	89	689
48	0	0.0	0.0	0.0	0.0	0.0	0	0
49	294	16.9	0.1	0.3	1.0	5.0	282	1,479
50	300	3.3	0.1	0.3	0.3	1.1	93	321
51	37	2.3	0.2	0.3	0.4	0.7	15	24

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
52	Cleft lip and palate repair
53	Sinus and mastoid procedures, age > 17
54	Sinus and mastoid procedures, age 0-17
55	Miscellaneous ear, nose and throat procedures
56	Rhinoplasty
57	T&A procedures except for tonsillectomy and/or adenoidectomy only, age > 17
58	T&A procedures except tonsillectomy and/or adenoidectomy only, age 0-17
59	Tonsillectomy and/or adenoidectomy only, age > 17
60	Tonsillectomy and/or ademoidectomy only, age 0-17
61	Myringotomy with tube insertion, age > 17
62	Myringotomy with tube sertion, age 0-17
63	Other ear, nose and throat O.R. procedures
64	Ear, nose and throat malignancy
65	Dysequilibrium
66	Epistaxis
67	Epiglottitis
68	Otitis media and URI, age > 69 and/or C.C.
69	Otitis media and URI, age 18-69 without C.C.
70	Otitis media and URI, age 0-17
71	Laryngotracheitis
72	Nasal trauma and deformity
73	Other ear, nose and throat diagnoses, age > 17
74	Other ear, nose and throat diagnoses, age 0-17
75	Major chest procedures
76	Other respiratory system O.R. procedures with C.C.
77	Other respiratory systme O.R. procedures without C.C.
78	Pulmonary embolism
79	Respiratory infections and inflammations, age > 69 and/or C.C.
80	Respiratory infections and inflammations, age 18-69 without C.C.
81	Respiratory infections and inflammations, age 0-17
82	Respiratory neoplasms
83	Major chest trauma, age > 69 and/or C.C.
84	Major chest trauma, age < 70 without C.C.
85	Pleural effusion, age > 69 and/or C.C.
86	Pleural effusion, age < 70 without C.C.
87	Pulmonary edema and respiratory failure
88	Chronic obstructive pulmonary disease
89	Simple pneumonia & pleurisy, age > 69 and/or C.C.
90	Simple pneumonia & pleurisy, age 18-69 without C.C.
91	Simple pneumonia & pleurisy, age 0-17
92	Interstitial lung disease, age > 69 and/or C.C.
93	Interstitial lung disease, age < 70 without C.C.
94	Pneumothorax, age > 69 and/or C.C.
95	Pneumothorax, age < 70 without C.C.
96	Bronchitis and asthma, age > 69 and/or C.C.
97	Bronchitis and asthma, age 18-69 without C.C.
98	Bronchitis and asthma, age 0-17
99	Respiratory signs and symptoms, age > 69 and/or C.C.
100	Respiratory signs and symptoms, age < 70 without C.C.
101	Other respiratory system diagnoses, age > 69 and/or C.C.
102	Other respiratory system diagnoses, age < 70 without C.C.

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
52	6	4.7	0.1	0.3	0.5	1.5	3	9
53	493	3.4	0.1	0.4	0.4	1.2	173	597
54	0	0.0	0.0	0.0	0.0	0.0	0	0
55	534	2.9	0.1	0.2	0.2	0.5	117	272
56	112	2.7	0.1	0.5	0.4	1.3	43	146
57	42	4.9	0.1	0.6	0.4	2.8	15	119
58	0	0.0	0.0	0.0	0.0	0.0	0	0
59	21	1.8	0.1	0.3	0.2	0.5	4	10
60	0	0.0	0.0	0.0	0.0	0.0	0	0
61	12	6.7	0.1	0.4	0.6	2.7	7	32
62	0	0.0	0.0	0.0	0.0	0.0	0	0
63	227	7.5	0.1	0.4	0.7	3.4	159	765
64	339	8.3	0.1	0.7	0.7	5.4	247	1,837
65	1,709	4.3	0.1	1.0	0.5	4.3	820	7,297
66	575	4.3	0.1	1.0	0.6	4.3	322	2,473
67	18	4.7	0.2	1.1	0.7	5.4	13	97
68	1,250	5.7	0.0	1.0	0.3	5.6	325	6,950
69	158	4.7	0.1	1.0	0.3	4.6	40	732
70	3	3.3	0.1	0.6	0.3	2.0	1	6
71	6	5.7	0.1	0.9	0.5	4.8	3	29
72	45	5.1	0.1	0.4	0.5	2.1	23	94
73	483	5.4	0.1	0.8	0.6	4.4	266	2,145
74	0	0.0	0.0	0.0	0.0	0.0	0	0
75	1,510	16.0	0.1	0.6	1.2	8.9	1,872	13,364
76	644	16.8	0.1	0.7	1.8	11.4	1,146	7,361
77	154	6.5	0.1	0.7	0.6	4.3	95	658
78	1,476	11.1	0.1	0.9	0.7	9.5	989	14,022
79	4,342	13.0	0.1	0.8	0.8	10.2	3,257	44,375
80	135	9.4	0.1	0.7	0.6	6.5	76	876
81	2	4.0	0.0	1.1	0.0	4.5	0	9
82	4,859	9.2	0.1	0.9	0.9	8.2	4,373	39,698
83	465	8.7	0.1	0.8	0.7	6.5	330	3,027
84	24	3.5	0.2	1.0	0.6	3.4	14	82
85	872	8.8	0.1	0.9	0.7	8.0	602	6,993
86	51	6.1	0.1	0.7	0.5	4.0	23	206
87	3,470	9.6	0.1	0.8	0.6	7.2	2,117	25,053
88	8,035	8.4	0.1	0.9	0.5	7.3	3,857	58,816
89	15,922	9.0	0.1	0.9	0.5	8.5	8,138	135,004
90	726	6.9	0.0	0.9	0.3	6.0	185	4,329
91	6	12.3	0.0	0.6	0.2	7.7	1	46
92	656	9.2	0.1	0.9	0.8	8.3	492	5,432
93	53	5.5	0.1	1.0	0.6	5.5	32	290
94	449	10.1	0.1	0.8	0.6	8.3	283	3,704
95	38	6.7	0.0	0.8	0.2	5.1	8	193
96	10,883	7.1	0.0	0.9	0.3	6.6	3,700	71,719
97	1,168	5.5	0.0	0.9	0.3	4.9	292	5,688
98	0	0.0	0.0	0.0	0.0	0.0	0	0
99	1,615	5.0	0.1	0.9	0.5	4.7	727	7,542
100	292	3.8	0.1	0.9	0.4	3.5	123	1,025
101	1,362	6.8	0.1	0.9	0.6	6.2	749	8,417
102	149	4.1	0.1	0.8	0.3	3.4	43	504

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
103	Heart transplant
104	Cardiac valve procedure with pump and with cardiac catheterization
105	Cardiac valve procedure with pump and without cardiac catheterization
106	Coronary bypass with cardiac catheterization
107	Coronary bypass without cardiac catheterization
108	Other cardiothoracic or vascular procedures with pump
109	Other cardiothoracic procedure - without pump
110	Major reconstructive vascular procedures without pump, age > 69 and/or CC
111	Major reconstructive vascular procedures without pump, age < 70 without CC
112	Vascular procedures except major reconstruction without pump
113	Amputation for circulatory system disorders except upper limb and toe
114	Upper limb and toe amputation for circulatory system disorders
115	Permanent cardiac pacemaker implant with AMI, heart failure and shock
116	Permanent cardiac pacemaker implant without AMI, heart failure or shock
117	Cardiac pacemaker replacement and revision except pulse generator replacement
118	Cardiac pacemaker pulse generator replacement
119	Vein ligation and stripping
120	Other circulatory system O.R. procedures
121	Circulatory disorders with AMI and cardiovascular complications - discharged alive
122	Circulatory disorders with AMI without cardiovascular compl. - discharged alive
123	Circulatory disorders with AMI - expired
124	Circulatory disorders except AMI with cardiac catheterization and complex diagnosis
125	Circulatory disorders except AMI with cardiac catheter. without complex diagnosis
126	Acute and subacute endocarditis
127	Heart failure & shock
128	Deep vein thromphlebitis
129	Cardiac arrest, unexplained
130	Peripheral vascular disorders, age > 69 and/or C.C.
131	Peripheral vascular disorders, ages < 70 without C.C.
132	Atherosclerosis, age > 69 and/or C.C.
133	Atherosclerosis, age < 70 without C.C.
134	Hypertension
135	Cardiac congenital and valvular disorders, age > 69 and/or C.C.
136	Cardiac congenital and valvular disorders, age 18-69 without C.C.
137	Cardiac congenital and valvular disorders, age 0-17
138	Cardiac arrhythmia & conduction disorders, age > 69 and/or CC
139	Cardiac arrhythmia & conduction disorders, age < 70 without CC
140	Angina pectoris
141	Syncope and collapse, age > 69 and/or C.C.
142	Syncope and collapse, age < 70 without C.C.
143	Chest pain
144	Other circulatory system diagnoses with C.C.
145	Other circulatory system diagnoses without C.C.
146	Rectal resection, age > 69 and/or C.C.
147	Rectal resection, age < 70 without C.C.
148	Major small & large bowel procedures, age > 69 and/or C.C.
149	Major small & large bowel procedures, age < 70 without C.C.
150	Peritoneal adhesiolysis, age > 69 and/or C.C.
151	Peritoneal adhesiolysis, age < 70 without C.C.
152	Minor small and large bowel procedures, age > 69 and/or C.C.
153	Minor small and large bowel procedures, age < 70 without C.C.

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
103	2	34.0	0.1	0.0	3.5	0.0	7	0
104	431	20.8	0.1	0.5	1.4	10.5	621	4,517
105	511	17.7	0.1	0.5	1.3	8.7	659	4,435
106	2,345	16.6	0.1	0.6	1.1	9.9	2,462	23,122
107	1,693	13.5	0.1	0.5	1.0	6.8	1,676	11,546
108	585	7.5	0.1	0.6	0.6	4.5	374	2,650
109	354	12.3	0.1	0.6	1.2	8.0	414	2,825
110	3,422	15.5	0.1	0.5	1.2	7.0	4,209	24,091
111	410	9.9	0.1	0.4	0.6	3.7	230	1,517
112	3,145	9.5	0.1	0.6	0.8	5.7	2,516	17,927
113	1,406	17.7	0.1	0.5	1.0	9.3	1,420	13,020
114	390	15.0	0.1	0.5	1.0	7.5	390	2,906
115	390	15.3	0.1	0.7	1.3	10.9	503	4,255
116	2,843	8.4	0.1	0.8	0.9	6.4	2,530	18,053
117	286	6.7	0.1	0.7	0.5	4.5	146	1,293
118	353	4.1	0.1	0.7	0.5	3.0	169	1,048
119	222	6.4	0.0	0.4	0.3	2.5	71	546
120	979	17.7	0.1	0.6	1.2	10.1	1,175	9,917
121	5,524	11.0	0.1	0.8	0.7	9.1	4,068	50,204
122	5,897	8.4	0.1	0.8	0.6	7.2	3,314	42,169
123	2,978	5.3	0.1	0.7	0.7	3.9	1,972	11,548
124	3,109	6.4	0.1	0.9	0.6	5.5	1,803	17,037
125	4,804	3.3	0.1	0.9	0.3	2.9	1,633	14,028
126	179	21.4	0.1	0.7	1.7	15.2	310	2,712
127	25,513	8.1	0.1	0.9	0.5	7.0	11,991	178,846
128	1,928	9.1	0.0	0.9	0.5	8.4	868	16,272
129	453	5.6	0.1	0.8	0.6	4.5	290	2,048
130	4,105	7.2	0.1	0.9	0.6	6.4	2,422	26,436
131	553	5.3	0.1	0.9	0.4	4.7	194	2,594
132	1,660	5.8	0.1	0.9	0.5	5.1	863	8,532
133	190	4.1	0.1	1.0	0.4	3.9	78	745
134	2,178	5.7	0.1	1.0	0.4	5.5	937	11,914
135	495	7.1	0.1	0.9	0.7	6.6	366	3,247
136	42	4.8	0.1	0.9	0.6	4.1	25	171
137	0	0.0	0.0	0.0	0.0	0.0	0	0
138	11,079	5.9	0.1	0.9	0.5	5.3	5,540	58,497
139	1,025	4.0	0.1	0.9	0.4	3.8	369	3,854
140	18,642	5.0	0.1	0.9	0.4	4.5	6,525	84,635
141	5,015	5.3	0.1	0.9	0.5	5.0	2,457	24,874
142	488	3.9	0.1	1.0	0.4	3.8	200	1,850
143	4,154	3.7	0.1	0.9	0.3	3.5	1,371	14,373
144	2,185	8.0	0.1	0.9	0.7	7.3	1,486	15,841
145	555	5.1	0.1	0.8	0.5	4.2	250	2,348
146	1,011	17.9	0.1	0.4	1.3	8.0	1,335	8,048
147	81	11.4	0.0	0.2	0.5	2.6	44	207
148	6,288	16.7	0.1	0.5	1.1	7.9	6,854	49,424
149	481	10.7	0.0	0.4	0.5	3.9	245	1,852
150	831	14.1	0.1	0.5	0.8	7.0	698	5,825
151	108	9.9	0.0	0.4	0.5	3.9	50	418
152	503	10.1	0.1	0.5	0.7	4.8	362	2,424
153	77	7.6	0.1	0.3	0.5	2.6	36	201

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
154	Stomach, esophageal and duodenal procedures, age > 69 and/or C.C.
155	Stomach, esophageal and duodenal procedures, age 18-69 without C.C.
156	Stomach, esophageal and duodenal procedures, age 0-17
157	Anal and stomal procedures, age > 69 and/or C.C.
158	Anal and stomal procedures, age < 70 without C.C.
159	Hernia procedures except inguinal and femoral, age > 69 and/or C.C.
160	Hernia procedures except inguinal and femoral, age 18-69 without C.C.
161	Inguinal and femoral hernia procedures, age > 69 and/or C.C.
162	Inguinal and femoral hernia procedures, age 18-69 without C.C.
163	Hernia procedures, age 0-17
164	Appendectomy with complicated principal diagnosis, age > 69 and/or C.C.
165	Appendectomy with complicated princiapl diagnosis, age < 70 without C.C.
166	Appendectomy without complicated principal diagnosis, age > 69 and/or C.C.
167	Appendectomy without complicated principal diagnosis, age < 70 without C.C.
168	Mouth procedure age > 69 and/or C.C.
169	Mouth procedures, age < 70 without C.C.
170	Other digestive system O.R. procedures, age > 69 and/or C.C.
171	Other digestive systme O.R. procedures, age < 70 without C.C.
172	Digestive malignancy, age > 69 and/or C.C.
173	Digestive malignancy, age < 70 without C.C.
174	GI hemorrhage, age > 69 and/or C.C.
175	GI hemorrhage, age < 70 without C.C.
176	Complicated peptic ulcer
177	Uncomplicated peptic ulcer, age > 69 and/or C.C.
178	Uncomplicated peptic ulcer, age < 70 without C.C.
179	Inflammatory bowel disease
180	G.I. obstruction, age > 69 and/or C.C.
181	G.I. obstruction, age < 70 without C.C.
182	Esophagitis, gastroenteritis, & misc. digestive disorders, age > 69 and/or C.C.
183	Esophagitis, gastroenteritis, & misc. digestive disorders, age 18-69 without C.C.
184	Esophagitis, gastroenteritis, & misc. digestive disorders, age 0-17
185	Dental & oral disorders excluding extractions and restorations, age > 17
186	Dental & oral disorders excluding extractions and restorations, age 0-17
187	Dental extractions and restorations
188	Other digestive system diagnoses, age > 69 without C.C.
189	Other digestive system diagnoses, age 18-69 without C.C.
190	Other digestive system diagnoses, age 0-17
191	Major pancreas, liver and shunt procedures
192	Minor pancreas, liver and shunt procedures
193	Biliary tract procedure except total cholecystectomy, age > 69 and/or C.C.
194	Biliary tract procedure except total cholecystectomy, age < 70 without C.C.
195	Total cholecystectomy with C.D.E., age > 69 and/or C.C.
196	Total cholecystectomy with C.D.E., age < 70 without C.C.
197	Total cholecystectomy without C.D.E., age > 69 and/or C.C.
198	Total cholecystectomy without C.D.E., age < 70 without C.C.
199	Hepatobiliary diagnostic procedure for malignancy
200	Hepatobiliary diagnostic procedure for non-malignancy
201	Other hepatobiliary or pancreas O.R. procedures
202	Cirrhosis and alcoholic hepatitis
203	Malignancy of hepatobiliary system or pancreas
204	Disorders of pancreas except malignancy

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
154	2,440	16.2	0.1	0.6	1.2	9.0	2,879	22,009
155	192	9.7	0.1	0.4	0.5	3.6	104	685
156	1	21.0	0.0	0.4	0.0	9.0	0	9
157	1,935	6.3	0.1	0.7	0.6	4.2	1,161	8,088
158	577	3.8	0.1	0.3	0.3	1.2	144	710
159	1,133	6.6	0.1	0.4	0.4	2.8	499	3,206
160	385	4.6	0.1	0.2	0.3	1.0	119	370
161	3,588	4.2	0.1	0.4	0.3	1.6	1,220	5,777
162	968	3.0	0.1	0.2	0.2	0.7	174	707
163	1	3.0	0.0	0.7	0.0	2.0	0	2
164	273	11.5	0.1	0.5	0.7	5.4	186	1,485
165	58	7.9	0.0	0.2	0.3	2.0	17	114
166	182	7.7	0.1	0.4	0.6	3.3	109	604
167	79	4.9	0.1	0.3	0.3	1.5	22	121
168	447	6.2	0.1	0.4	0.6	2.5	246	1,131
169	120	3.7	0.1	0.2	0.5	0.8	64	92
170	707	15.9	0.1	0.6	1.3	9.9	884	6,964
171	50	8.5	0.1	0.3	0.5	2.2	24	112
172	1,993	9.5	0.1	0.8	0.7	7.7	1,475	15,406
173	120	5.3	0.1	0.8	0.4	4.0	46	476
174	7,836	6.9	0.1	0.9	0.7	6.3	5,172	49,053
175	523	5.1	0.1	0.9	0.5	4.4	272	2,322
176	608	7.4	0.1	1.0	0.7	7.1	426	4,335
177	1,326	6.1	0.1	1.0	0.6	5.9	796	7,757
178	203	4.8	0.1	1.0	0.5	4.6	106	936
179	377	9.3	0.1	0.9	0.8	8.6	305	3,257
180	3,514	6.9	0.1	0.9	0.6	6.2	2,249	21,927
181	399	4.5	0.1	0.9	0.4	4.0	164	1,584
182	15,050	6.0	0.1	1.0	0.5	5.7	7,826	86,086
183	2,005	4.5	0.1	0.9	0.4	4.2	882	8,421
184	8	3.9	0.1	1.1	0.5	4.1	4	33
185	266	5.9	0.1	0.8	0.6	4.7	162	1,261
186	0	0.0	0.0	0.0	0.0	0.0	0	0
187	156	3.3	0.1	0.6	0.3	2.0	47	317
188	2,112	6.4	0.1	0.9	0.7	5.9	1,415	12,376
189	262	4.3	0.1	0.7	0.3	3.1	84	815
190	10	6.3	0.0	0.6	0.2	3.6	2	36
191	274	21.7	0.1	0.5	1.4	10.6	370	2,893
192	169	23.4	0.1	0.5	1.3	11.9	215	2,004
193	766	16.3	0.1	0.6	1.3	10.2	988	7,821
194	43	8.6	0.1	0.4	0.6	3.5	25	152
195	1,376	13.8	0.1	0.5	0.9	7.2	1,280	9,921
196	63	9.4	0.1	0.4	0.7	4.0	45	249
197	4,009	10.3	0.1	0.5	0.8	5.6	3,207	22,450
198	857	6.7	0.1	0.3	0.4	2.3	300	1,997
199	197	15.5	0.1	0.6	1.5	9.6	286	1,887
200	111	13.1	0.1	0.8	0.9	10.2	100	1,128
201	234	12.6	0.1	0.6	0.9	7.8	201	1,823
202	820	9.7	0.1	0.9	0.7	8.9	590	7,298
203	1,559	8.9	0.1	0.8	0.6	7.6	967	11,770
204	1,624	8.1	0.1	0.9	0.7	7.4	1,072	12,066

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
205	Disorders of liver except malignancy, cirrhosis & alcoholic hepatitis, age > 69 and/or C.C.
206	Disorders of liver except malignancy, cirrhosis & alcoholic hepatitis, age < 70 without C.C.
207	Disorders of the biliary tract, age > 69 and/or C.C.
208	Disorders of the biliary tract, age < 70 without C.C.
209	Major joint & limb reattachment
210	Hip & femur procedures except major joint, age > 69 and/or C.C.
211	Hip & femur procedures except major joint, age 18-69 without C.C.
212	Hip & femur procedures except major joint, age 0-17
213	Amputations for musculoskeletal system and connective tissue disorders
214	Back and neck procedures, age > 69 and/or C.C.
215	Back and neck procedures, age < 70 without C.C.
216	Biopsies of musculoskletal system and connective tissue
217	Wound debridement & skin graft except hand, for musculoskeletal & connective tissue
218	Lower extremity and humerus procedure except hip, foot and femur, age > 69 and/or C.C.
219	Lower extremity and humerus procedure except hip, foot and femur, age 18-69 without C.C.
220	Lower extremity and humerus procedure except hip, foot and femur, age 0-17
221	Knee procedures age > 69 and/or C.C.
222	Knee procedures, age < 70 without C.C.
223	Major shoulder/elbow procedures, or other upper extremity procedures with C.C.
224	Shoulder, elbow or forearm procedures except major joint procedures, without C.C.
225	Foot procedures
226	Soft tissue procedures, age > 69 and/or C.C.
227	Soft tissue procedures, age < 70 without C.C.
228	Major thumb or joint procedures, or other hand or wrist procedures with C.C.
229	Hand or wrist procedures, except major joint procedures, without C.C.
230	Local excision and removal of internal fixation devices of hip and femur
231	Local excision and removal of internal fixation devices except hip and femur
232	Arthroscopy
233	Other musculoskeletal system and connective tissue O.R. procedures, age > 69 and/or C.C.
234	Other musculoskeletal system and connective tissue O.R. procedures, age < 70 without C.C.
235	Fractures of femur
236	Fractures of hip and pelvis
237	Sprains, strains and dislocations of hip, pelvis and thigh
238	Osteomyelitis
239	Pathological fractures and musuloskeletal and connective tissue malignancy
240	Connective tissue disorders, age > 69 and/or C.C.
241	Connective tissue disorders, age < 70 without C.C.
242	Septic arthritis
243	Medical back problems
244	Bone diseases and specific arthropathies, age > 69 and/or C.C.
245	Bone diseases and specific arthropathies, age < 70 without C.C.
246	Nonspecific arthropathies
247	Signs and symptoms of musculoskeletal system and connective tissue
248	Tendonitis, myositis and bursitis
249	Aftercare, musculoskeletal system and connective tissue

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
205	1,068	8.6	0.1	0.9	0.8	7.5	865	7,999
206	135	5.2	0.1	1.0	0.5	5.0	70	674
207	2,306	6.5	0.1	0.9	0.7	6.2	1,522	14,251
208	276	4.3	0.1	1.0	0.5	4.1	130	1,137
209	8,988	13.7	0.1	0.4	0.9	5.3	8,359	47,816
210	5,317	14.6	0.1	0.5	1.2	7.3	6,127	38,945
211	284	11.7	0.1	0.4	0.6	4.3	174	1,210
212	6	14.7	0.1	0.5	0.8	7.2	5	43
213	279	15.0	0.1	0.5	0.8	6.8	229	1,897
214	1,710	13.7	0.1	0.5	1.2	6.6	2,001	11,354
215	787	9.7	0.1	0.3	0.6	3.4	496	2,668
216	250	13.2	0.1	0.7	1.5	9.2	365	2,290
217	507	18.4	0.1	0.5	1.3	8.5	639	4,299
218	957	9.5	0.1	0.4	0.6	3.9	593	3,751
219	378	6.6	0.1	0.2	0.4	1.4	144	544
220	1	5.0	0.0	1.2	0.0	6.0	0	6
221	429	6.7	0.1	0.4	0.6	2.5	266	1,090
222	227	4.9	0.1	0.3	0.5	1.4	109	313
223	665	5.9	0.1	0.4	0.5	2.4	313	1,609
224	388	4.1	0.1	0.2	0.3	1.0	113	384
225	1,206	4.5	0.1	0.4	0.3	1.6	410	1,942
226	334	8.1	0.1	0.6	0.8	4.6	261	1,526
227	114	3.7	0.0	0.3	0.2	1.0	19	109
228	71	4.2	0.2	0.2	0.9	1.0	62	72
229	508	3.7	0.1	0.4	0.3	1.4	137	706
230	194	8.0	0.1	0.5	0.5	3.8	105	728
231	478	6.9	0.1	0.4	0.5	2.8	253	1,315
232	35	6.1	0.1	0.8	0.8	4.9	27	171
233	485	9.5	0.1	0.6	1.1	6.2	509	2,988
234	139	6.1	0.1	0.4	0.7	2.5	92	350
235	328	14.8	0.0	0.6	0.6	8.2	207	2,699
236	2,059	10.5	0.1	0.8	0.8	7.9	1,688	16,266
237	122	6.8	0.1	0.8	0.6	5.3	76	651
238	271	14.1	0.1	0.9	1.2	12.7	328	3,428
239	3,041	9.9	0.1	0.9	0.8	8.8	2,342	26,730
240	823	8.8	0.1	0.9	0.8	7.8	683	6,419
241	194	6.9	0.1	0.9	0.7	6.3	132	1,214
242	129	10.6	0.1	1.0	1.2	10.7	150	1,382
243	7,500	7.1	0.1	0.9	0.7	6.6	4,950	49,500
244	1,116	7.4	0.1	0.9	0.6	6.6	670	7,388
245	142	7.5	0.1	0.7	0.4	5.0	62	706
246	162	8.1	0.1	0.7	0.7	5.3	113	855
247	653	6.4	0.1	0.8	0.6	5.4	366	3,513
248	398	6.2	0.1	0.9	0.6	5.4	243	2,149
249	301	6.9	0.1	0.5	0.4	3.2	132	975

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
250	Fractures, sprains, strains & dislocations of forearm, hand & foot, age > 69 and/or C.C.
251	Fractures, sprains, strains and dislocations of forearm, hand & foot, age 18-69 without C.C.
252	Fractures, sprains, strains and dislocations of forearm, hand and foot, age 0-17
253	Fractures, sprains, strains and dislocations of upper arm, lower leg except foot, age > 69 and/or C.C.
254	Fractures, sprains, strains and dislocations of upper arm, lower leg except foot, age 18-19 without C.C.
255	Fractures, sprains, strains and dislocations of upper arm, lower leg except foot, age 0-17
256	Other diagnoses of musculoskeletal system and connective tissue
257	Total mastectomy for malignancy, age > 69 and/or C.C.
258	Total mastectomy for malignancy, age < 70 without C.C.
259	Subtotal mastectomy for malignancy, age > 69 and/or C.C.
260	Subtotal mastectomy for malignancy, age < 70 without C.C.
261	Breast procedure for non-malignancy except biopsy and local excision
262	Breast biopsy and local excision for non-malignancy
263	Skin grafts and/or debridement for skin ulcer or cellulitis, age > 69 and/or C.C.
264	Skin grafts and/or debridement for skin ulcer or cellulitis, age < 70 without C.C.
265	Skin grafts and/or debridement except for skin ulcer or cellulitis with C.C.
266	Skin grafts and/or debridement except for skin ulcer or cellulitis without C.C.
267	Perianal and pilonidal procedures
268	Skin, subcutaneous tissue and breast plastic procedures
269	Other skin, subcutaneous tissue and breast O.R. procedures, age > 69 and/or C.C.
270	Other skin, subcutaneous tissue and breast O.R. procedures, age < 70 without C.C.
271	Skin ulcers
272	Major skin disorders, age > 69 and/or C.C.
273	Major skin disorders, age < 70 without C.C.
274	Malignant breast disorders, age > 69 and/or C.C.
275	Malignant breast disorders, age < 70 without C.C.
276	Non-malignant breast disorders
277	Cellulitis, age > 69 and/or C.C.
278	Cellulitis, age < 70 without C.C.
279	Cellulitis, age 0-17
280	Trauma to the skin, subcutaneous tissue and breast, age > 69 and/or C.C.
281	Trauma to the skin, subcutaneous tissue and breast, age 18-69 without C.C.
282	Trauma to the skin, subcutaneous tissue and breast, aged 0-17
283	Minor skin disorders, age > 69 and/or C.C.
284	Minor skin disorders, age < 70 without C.C.
285	Amputations of lower limb for endocrine, nutritional and metabolic disorders
286	Adrenal and pituitary procedures
287	Skin grafts and wound debridement for endocrine, nutritional and metabolic disorders
288	O.R. procedures for obesity
289	Parathyroid procedures
290	Thyroid procedures
291	Thyroglossal procedures
292	Other endocrine, nutritional and metabolic O.R. procedures, age > 69 and/or C.C.
293	Other endocrine, nutritional and metabolic O.R. procedures, age < 70 without C.C.
294	Diabetes, age > 35
295	Diabetes, age 0-35

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
250	418	5.2	0.1	0.7	0.5	3.6	192	1,522
251	83	2.7	0.1	0.4	0.2	1.1	15	94
252	0	0.0	0.0	0.0	0.0	0.0	0	0
253	1,593	7.1	0.1	0.7	0.5	4.8	860	7,646
254	281	4.7	0.1	0.5	0.3	2.3	76	638
255	0	0.0	0.0	0.0	0.0	0.0	0	0
256	555	7.0	0.1	0.7	0.5	5.1	289	2,831
257	1,965	6.8	0.1	0.3	0.5	2.2	943	4,343
258	438	5.7	0.0	0.2	0.3	1.0	123	420
259	343	5.4	0.1	0.5	0.6	2.6	209	875
260	100	3.4	0.0	0.2	0.1	0.5	10	53
261	262	3.6	0.1	0.3	0.2	0.9	52	246
262	299	2.5	0.1	0.3	0.2	0.8	45	242
263	1,398	20.0	0.0	0.6	1.0	11.8	1,328	16,440
264	147	17.3	0.0	0.4	0.6	7.0	93	1,025
265	288	11.5	0.1	0.5	0.8	5.8	239	1,673
266	388	5.1	0.0	0.3	0.2	1.5	93	563
267	25	5.6	0.1	0.7	0.4	4.0	11	101
268	125	3.9	0.1	0.3	0.2	1.2	29	153
269	710	9.4	0.1	0.5	0.7	5.0	525	3,578
270	191	5.6	0.1	0.3	0.4	1.5	84	292
271	942	11.5	0.1	0.8	0.8	9.2	725	8,666
272	520	9.2	0.1	0.9	0.7	8.0	359	4,144
273	101	7.3	0.1	0.9	0.5	6.7	45	678
274	289	10.3	0.1	0.8	0.7	8.4	191	2,413
275	23	4.7	0.0	0.7	0.2	3.1	4	71
276	55	3.8	0.1	0.7	0.4	2.6	24	144
277	3,204	8.6	0.1	0.9	0.6	7.5	1,890	23,998
278	496	6.7	0.1	0.9	0.5	5.8	253	2,892
279	2	4.5	0.3	0.6	1.5	2.5	3	5
280	1,178	5.9	0.1	0.9	0.5	5.1	530	6,055
281	153	3.8	0.0	0.8	0.1	3.1	21	477
282	1	3.0	0.0	1.3	0.0	4.0	0	4
283	494	6.5	0.1	0.9	0.6	5.9	306	2,915
284	77	4.5	0.1	0.8	0.4	3.8	27	289
285	360	21.1	0.1	0.6	1.3	11.9	475	4,295
286	74	15.7	0.1	0.5	1.8	7.5	135	555
287	341	21.1	0.1	0.6	1.1	12.4	361	4,239
288	37	11.9	0.1	0.6	1.0	6.7	36	247
289	182	7.9	0.1	0.6	0.8	4.4	144	806
290	440	5.4	0.1	0.4	0.5	2.4	229	1,038
291	13	2.6	0.1	0.0	0.2	0.1	2	1
292	286	15.1	0.1	0.7	1.2	10.6	343	3,040
293	21	7.1	0.1	0.7	0.7	4.8	14	100
294	5,452	7.6	0.1	0.9	0.4	6.7	2,344	36,637
295	147	6.0	0.1	0.8	0.6	4.8	87	706

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
296	Nutritional & misc. metabolic disorders, age > 69 and/or C.C.
297	Nutritional & misc. metabolic disorders, age 18-69 without C.C.
298	Nutritional and miscellaneous metabolic disorders, age 0-17
299	Inborn errors of metabolism
300	Endocrine disorders, age > 69 and/or C.C.
301	Endocrine disorders, age < 70 without C.C.
302	Kidney transplant
303	Kidney, ureter and major bladder procedures for neoplasm
304	Kidney, ureter and major bladder procedures for non-neoplasm, age > 69 and/or C.C.
305	Kidney, ureter and major bladder procedures for non-neoplasm, age < 70 without C.C.
306	Prostatectomy, age > 69 and/or C.C.
307	Prostatectomy, age < 70 without C.C.
308	Minor bladder procedures, age > 69 and/or C.C.
309	Minor bladder procedures, age < 70 without C.C.
310	Transurethral procedures, age > 69 and/or C.C.
311	Transurethral procedures, age < 70 without C.C.
312	Urethral procedures, age > 69 and/or C.C.
313	Urethral procedures, age 18-69 without C.C.
314	Urethral procedures, age 0-17
315	Other kidney and urinary tract O.R. procedures
316	Renal failure
317	Admit for renal dialysis
318	Kidney and urinary tract neoplasms, age > 69 and/or C.C.
319	Kidney and urinary tract neoplasms, age < 70 without C.C.
320	Kidney & urinary tract infections, age > 69 and/or C.C.
321	Kidney & urinary tract infections, age 18-69 without C.C.
322	Kidney & urinary tract infections, age 0-17
323	Urinary stones, age > 69 and/or C.C., and/or ESW lithotripsy
324	Urinary stones, age < 70 without C.C.
325	Kidney and urinary tract signs and symptoms, age > 69 and/or C.C.
326	Kidney and urinary tract signs and symptoms, age 18-69 without C.C.
327	Kidney and urinary tract signs and symptoms, age 0-17
328	Urethral stricture, age > 69 and/or C.C.
329	Urethral stricture, age 18-69 without C.C.
330	Urethral stricture, age 0-17
331	Other kidney and urinary tract diagnoses, age > 69 and/or C.C.
332	Other kidney and urinary tract diagnoses, age 18-69 without C.C.
333	Other kidney and urinary tract diagnoses, age 0-17
334	Major male pelvic procedures with C.C.
335	Major male pelvic procedures without C.C.
336	Transurethral prostatectomy, age > 69 and/or C.C.
337	Transurethral prostatectomy, age < 70 without C.C.
338	Testes procedures for malignancy
339	Testes procedures, non-malignant, age > 17
340	Testes procedures, non-malignant, age 0-17
341	Penis procedures
342	Circumcision, age > 17
343	Circumcision, age 0-17
344	Other male reproductive system O.R. procedure for malignancy
345	Other male reproductive system O.R. procedure except for malignancy
346	Malignancy, male reproductive system, age > 69 and/or C.C.

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
296	11,123	7.7	0.1	0.9	0.5	6.7	5,005	74,190
297	490	4.8	0.1	1.0	0.3	4.6	162	2,274
298	10	6.4	0.0	0.9	0.0	5.9	0	59
299	74	6.7	0.1	1.0	0.5	6.7	39	494
300	654	9.0	0.1	0.9	1.0	8.4	628	5,481
301	76	5.6	0.1	1.1	0.7	6.1	50	466
302	317	18.6	0.1	0.4	1.4	8.0	444	2,549
303	742	15.8	0.1	0.4	1.2	7.1	868	5,239
304	1,066	11.8	0.1	0.5	0.9	6.3	991	6,684
305	207	6.7	0.1	0.4	0.4	2.4	77	491
306	906	9.3	0.1	0.6	0.7	5.4	652	4,865
307	81	6.2	0.1	0.4	0.5	2.4	38	195
308	537	8.8	0.1	0.5	0.7	4.2	381	2,239
309	84	4.6	0.1	0.4	0.3	1.7	22	139
310	2,733	5.2	0.1	0.5	0.5	2.7	1,312	7,324
311	512	3.3	0.1	0.4	0.3	1.3	128	655
312	379	5.2	0.1	0.5	0.5	2.6	174	966
313	57	3.7	0.1	0.4	0.2	1.4	11	79
314	0	0.0	0.0	0.0	0.0	0.0	0	0
315	975	14.8	0.1	0.7	1.1	9.8	1,112	9,506
316	2,108	9.1	0.1	0.9	0.9	7.9	1,834	16,611
317	126	2.5	0.0	0.3	0.0	0.9	5	107
318	532	9.1	0.1	0.8	0.7	7.2	394	3,825
319	26	9.9	0.0	0.2	0.3	2.3	7	60
320	8,178	8.5	0.1	0.9	0.5	7.3	4,089	59,454
321	506	5.9	0.1	0.9	0.4	5.4	192	2,712
322	8	8.7	0.1	1.2	0.5	10.8	4	86
323	1,632	4.1	0.1	0.8	0.5	3.4	751	5,467
324	525	2.8	0.1	0.8	0.3	2.3	147	1,202
325	1,004	5.5	0.1	0.9	0.6	4.7	572	4,709
326	117	3.7	0.1	0.7	0.3	2.6	40	304
327	1	2.0	0.0	0.0	0.0	0.0	0	0
328	137	4.3	0.1	0.8	0.5	3.5	67	484
329	13	2.7	0.1	0.8	0.2	2.1	2	27
330	0	0.0	0.0	0.0	0.0	0.0	0	0
331	1,522	7.0	0.1	0.9	0.8	6.2	1,142	9,391
332	158	5.6	0.1	0.6	0.4	3.1	70	488
333	6	6.8	0.0	0.2	0.2	1.2	1	7
334	482	12.0	0.1	0.3	0.8	4.1	381	1,962
335	318	9.9	0.0	0.2	0.3	2.0	105	646
336	8,513	6.8	0.1	0.4	0.5	2.9	4,512	24,603
337	1,150	5.0	0.1	0.2	0.3	1.2	311	1,357
338	520	5.6	0.1	0.5	0.5	2.8	234	1,451
339	359	3.7	0.1	0.4	0.3	1.4	104	495
340	0	0.0	0.0	0.0	0.0	0.0	0	0
341	679	4.8	0.1	0.4	0.4	1.8	258	1,249
342	71	2.9	0.1	0.4	0.3	1.0	20	73
343	0	0.0	0.0	0.0	0.0	0.0	0	0
344	196	7.1	0.1	0.5	0.6	3.4	123	672
345	124	5.9	0.1	0.5	0.4	3.0	51	371
346	801	7.4	0.1	0.9	0.6	6.3	505	5,022

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
347	Malignancy, male reproductive system, age < 70 without C.C.
348	Benign prostatic hypertrophy, age > 69 and/or C.C.
349	Benign prostatic hypertrophy, age < 70 without C.C.
350	Inflammation of the male reproductive system
351	Sterilization, male
352	Other male reproductive system diagnoses
353	Pelvic evisceration, radical hysterectomy and vulvectomy
354	Uterine, adnexa procedures for non-ovarian/adnexal malignancy, age > 69 and/or C.C.
355	Uterine, adnexa procedures for non-ovarian/adnexal malignancy, age < 70 without C.C.
356	Female reproductive system reconstructive procedures
357	Uterine and adnexa procedures for ovarian or adnexal malignancy
358	Uterine and adnexa procedures for non-malignancy, age > 69 or C.C.
359	Uterine and adnexa procedures for non-malignancy, age < 70 without C.C.
360	Vagina, cervix and vulva procedures
361	Laparoscopy and incisional tubal interruption
362	Endoscopic tubal interruption
363	D & C, conization and radio-implant for malignancy
364	D & C, conization, except for malignancy
365	Other female reproductive system O.R. procedures
366	Malignancy, female reproductive system, age > 69 and/or C.C.
367	Malignancy, female reproductive system, age < 70 without C.C.
368	Infections, female reproductive system
369	Menstrual and other female reproductive system disorders
370	Cesarean section with C.C.
371	Cesarean section without C.C.
372	Vaginal delivery with complicating diagnoses
373	Vaginal delivery without complicating diagnoses
374	Vaginal delivery with sterilization and/or D & C
375	Vaginal delivery with O.R. procedure except sterilization and/or D & C
376	Postpartum postabortion diagnoses without O.R. procedures
377	Postpartum postabortion diagnoses with O.R. procedures
378	Ectopic pregnancy
379	Threatened abortion
380	Abortion without D & C
381	Abortion with D & C, aspiration curettage or hysterectomy
382	False labor
383	Other antepartum diagnoses with medical complications
384	Other antepartum diagnoses without medical complications
385	Neonate, died or transferred
386	Extreme immaturity or respiratory distress syndrome, neonate
387	Prematurity with major problems
388	Prematurity without major problems
389	Full term neonate with major problems
390	Neonates with other significant problems
391	Normal newborn
392	Splenectomy, age > 17
393	Splenectomy, age 0-17
394	Other O.R. procedures of the blood and blood-forming organs
395	Red blood cell disorders, age > 17
396	Red blood cell disorders, age 0-17
397	Coagulation disorders

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
347	69	3.2	0.1	0.7	0.3	2.4	17	162
348	582	4.5	0.1	0.8	0.6	3.5	372	2,037
349	97	2.0	0.1	0.4	0.2	0.9	19	84
350	502	5.8	0.1	1.0	0.5	5.7	266	2,836
351	0	0.0	0.0	0.0	0.0	0.0	0	0
352	68	4.3	0.1	0.7	0.5	3.1	33	209
353	116	1.8	0.4	1.9	0.8	3.3	87	380
354	1,448	8.7	0.1	0.3	0.5	2.9	782	4,141
355	607	6.4	0.0	0.1	0.3	0.8	164	498
356	1,392	6.4	0.0	0.2	0.3	1.4	432	1,935
357	197	13.3	0.1	0.5	1.0	6.3	199	1,231
358	494	7.9	0.1	0.3	0.5	2.3	242	1,151
359	158	6.3	0.0	0.1	0.2	0.8	32	126
360	286	5.2	0.1	0.5	0.5	2.6	152	744
361	30	3.8	0.2	0.5	0.8	1.9	24	58
362	1	2.0	0.0	0.0	0.0	0.0	0	0
363	255	5.3	0.1	0.6	0.7	3.2	184	826
364	319	3.0	0.1	0.6	0.4	1.8	124	561
365	156	13.1	0.1	0.5	0.9	6.1	144	953
366	352	8.4	0.1	0.8	0.6	6.9	197	2,425
367	37	3.3	0.1	0.7	0.4	2.1	16	79
368	75	6.7	0.1	0.9	0.6	6.2	46	461
369	201	4.7	0.1	0.9	0.5	4.0	94	808
370	20	5.8	0.1	0.1	0.5	0.4	9	7
371	32	5.6	0.0	0.1	0.1	0.3	3	10
372	10	3.3	0.1	0.1	0.2	0.3	2	3
373	81	2.7	0.0	0.0	0.1	0.1	4	6
374	13	4.4	0.0	0.0	0.0	0.0	0	0
375	0	0.0	0.0	0.0	0.0	0.0	0	0
376	9	2.9	0.1	0.1	0.2	0.3	2	3
377	3	14.7	0.0	0.0	0.0	0.0	0	0
378	8	4.9	0.2	0.1	0.9	0.4	7	3
379	7	2.3	0.1	1.1	0.1	2.4	1	17
380	5	2.8	0.0	0.0	0.0	0.0	0	0
381	16	2.1	0.0	0.2	0.1	0.4	1	7
382	9	1.1	0.0	0.6	0.0	0.7	0	6
383	35	3.2	0.0	0.2	0.1	0.6	3	21
384	5	1.4	0.1	0.1	0.2	0.2	1	1
385	2	3.0	0.3	1.0	1.0	3.0	2	6
386	0	0.0	0.0	0.0	0.0	0.0	0	0
387	0	0.0	0.0	0.0	0.0	0.0	0	0
388	0	0.0	0.0	0.0	0.0	0.0	0	0
389	3	20.0	0.0	0.1	0.7	1.7	2	5
390	2	3.0	0.0	1.5	0.0	4.5	0	9
391	0	0.0	0.0	0.0	0.0	0.0	0	0
392	123	16.4	0.1	0.7	1.4	11.7	175	1,438
393	0	0.0	0.0	0.0	0.0	0.0	0	0
394	110	7.5	0.1	0.7	0.6	5.0	68	546
395	4,047	6.4	0.1	0.9	0.5	5.8	1,943	23,554
396	10	1.4	0.0	0.9	0.0	1.3	0	13
397	546	7.9	0.1	0.9	0.8	7.3	448	3,959

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

	DRG
398	Reticuloendothelial and immunity disorders, age > 69 and/or C.C.
399	Reticuloendothelial and immunity disorders, age < 70 without C.C.
400	Lymphoma or leukemia with major O.R. procedures
401	Lymphoma and non-acute leukemia with other O.R. procedures with C.C.
402	Lymphoma and non-acute leukemia with other O.R. procedures without C.C.
403	Lymphoma and non-acute leukemia with C.C.
404	Lymphoma and non-acute leukemia without C.C.
405	Acute leukemia without major O.R. procedure, age 0-17
406	Myeloproliferative disorders or poorly differentiated neoplasms with major O.R procedures with C.C.
407	Myeloproliferative disorders or poorly differentiated neoplasms with major O.R. procedures without C.C.
408	Myeloproliferate disorders or poorly differentiated neoplasms with other O.R. procedures
409	Radiotherapy
410	Chemotherapy
411	History of malignancy without endoscopy
412	History of malignancy with endoscopy
413	Other myeloproliferative disorders or poorly differentiated neoplasm diagnosis, age > 69 and/or C.C.
414	Other myeloproliferative disorders or poorly differentiated neoplasm diagnosis, age < 70 without C.C
415	O.R. procedure for infectious and parasitic diseases
416	Septicemia, age > 17
417	Septicemia, age 0-17
418	Postoperative and post-traumatic infections
419	Fever of unknown origin, age > 69 and/or C.C.
420	Fever of unknown origin, age 18-69 without C.C.
421	Viral illness, age > 17
422	Viral illness and fever of unknown origin, age 0-17
423	Other infectious and parasitic disease diagnoses
424	O.R. procedure with principal diagnosis of mental illness
425	Acute adjustment reactions and disturbances of psychosocial dysfunction
426	Depressive neuroses
427	Neuroses except depressive
428	Disorders of personality and impulse control
429	Organic disturbances and mental retardation
430	Psychoses
431	Childhood mental disorders
432	Other diagnoses of mental disorders
433	Substance use and substance induced organic mental disorders, left against medical advice
434	Substance abuse, intoxication, or induced mental syndrome except dependence and/or other symptomatic treatment
435	Substance dependence, detoxification and/or other symptomatic treatment
436	Substance dependence with rehabilitation therapy
437	Substance dependence, combined rehabilitation and detoxification therapy
438	OBS
439	Skin grafts for injuries
440	Wound debridement for injuries
441	Hand procedures for injuries

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
398	600	8.1	0.1	0.9	0.6	7.1	354	4,248
399	56	5.3	0.1	0.9	0.5	5.0	26	280
400	390	16.2	0.1	0.6	1.5	9.2	569	3,596
401	409	13.3	0.1	0.7	1.2	9.5	495	3,865
402	91	6.7	0.1	0.5	0.6	3.5	53	317
403	1,843	11.7	0.1	0.8	0.9	9.7	1,640	17,951
404	247	7.2	0.1	1.0	0.7	6.9	178	1,714
405	0	0.0	0.0	0.0	0.0	0.0	0	0
406	227	16.5	0.1	0.5	1.1	8.6	241	1,959
407	99	7.9	0.1	0.4	0.5	3.1	48	306
408	477	6.9	0.1	0.7	0.6	4.6	301	2,185
409	405	10.1	0.0	0.7	0.5	6.8	203	2,738
410	6,002	3.2	0.0	1.0	0.1	3.3	840	19,687
411	62	4.6	0.1	0.8	0.3	3.7	17	226
412	45	2.7	0.1	0.6	0.2	1.7	8	78
413	796	10.1	0.1	0.8	0.8	8.0	605	6,328
414	60	7.5	0.1	0.7	0.6	5.2	35	310
415	1,034	19.6	0.1	0.6	1.5	11.8	1,561	12,201
416	4,465	10.9	0.1	0.8	0.8	9.1	3,527	40,498
417	5	7.4	0.1	1.0	0.4	7.4	2	37
418	497	8.7	0.1	0.8	0.7	7.0	323	3,489
419	876	8.2	0.1	0.9	0.7	7.1	587	6,211
420	89	6.3	0.1	0.9	0.6	5.9	53	524
421	714	4.1	0.1	1.3	0.3	5.5	243	3,920
422	3	4.0	0.1	0.4	0.3	1.7	1	5
423	353	11.1	0.1	0.8	0.7	8.6	254	3,032
424	295	23.2	0.1	0.5	1.6	11.3	457	3,325
425	877	6.8	0.1	0.8	0.5	5.2	439	4,587
426	1,067	10.8	0.1	0.6	0.7	6.2	726	6,594
427	184	11.1	0.1	0.5	0.7	5.1	125	938
428	144	12.9	0.0	0.3	0.5	4.0	66	580
429	2,267	12.5	0.1	0.6	0.8	7.3	1,791	16,549
430	7,411	16.4	0.0	0.4	0.7	6.6	5,410	48,913
431	40	9.7	0.1	0.8	0.7	7.5	28	298
432	35	7.5	0.1	0.6	0.7	4.4	25	153
433	269	5.2	0.0	0.5	0.2	2.8	59	761
434	316	9.8	0.1	0.7	0.5	6.5	164	2,041
435	882	8.5	0.0	0.6	0.4	5.5	309	4,807
436	352	14.1	0.0	0.4	0.3	5.4	88	1,901
437	311	17.8	0.0	0.5	0.4	8.4	128	2,597
438	471	9.7	0.0	0.6	0.4	5.7	207	2,675
439	98	16.2	0.0	0.4	0.7	6.6	66	650
440	250	16.5	0.1	0.5	1.0	7.8	250	1,938
441	54	4.0	0.1	0.4	0.3	1.6	16	87

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

---

	DRG
442	Other O.R. proceudres for injuries, age > 69 and/or C.C.
443	Other O.R. procedures for injuries, age < 70 without C.C.
444	Multiple trauma, age > 69 and/or C.C.
445	Multiple trauma, age 18-69 without C.C.
446	Multiple trauma, age 0-17
447	Allergic reactions, age > 17
448	Allergic reactions, age 0-17
449	Poisoning and toxic effects of drugs, age > 69 and/or C.C.
450	Poisoning and toxic effects of drugs, age 18-69 without C.C.
451	Poisoning and toxic effects of drugs, age 0-17
452	Complications of treatment, age > 69 and/or C.C.
453	Complications of treatment, age < 70 without C.C.
454	Other injuries, poisonings and toxic effects diagnoses, age > 69 and/or C.C.
455	Other injuries, poisonings and toxic effects diagnoses, age < 70
456	Burns transferred to another acute care facility
457	Extensive burns, without O.R. procedures
458	Non-extensive burns with skin grafts
459	Non-extensive burns with wound debridement and other O.R. procedures
460	Non-extensive burns without O.R. procedures
461	O.R. procedures with diagnoses of other contact with health services
462	Rehabilitation
463	Signs and symptoms with C.C.
464	Signs and symptoms without C.C.
465	Aftercare with history of malignancy as secondary diagnoses
466	Aftercare without history of malignancy as secondary diagnoses
467	Other factors influencing health status
468	Unrelated O.R. procedure
469	Patient diagnosis invalid as discharged diagnosis
470	Ungroupable
471	Bilateral or multiple major joint procedures of the lower extremity
472	Extensive burns with O.R. procedure
473	Acute leukemia w/o major O.R. procedure, age > 17

Total Discharges
Mean Consult Rate
Mean Visit Rate

Source: 1986 BMAD 5% Beneficiary File.

APPENDIX A-1 (continued)

NUMBER OF DISCHARGES AND RATES OF CONSULTS AND VISITS FOR ALL DRGs

DRG	No. of Admissions	Average Length of Stay	Consults Per Inpatient Day	Visits Per Inpatient Day	Consults Per Discharge	Visits Per Discharge	Total Consults	Total Visits
442	2,368	9.3	0.1	0.5	0.7	4.7	1,681	11,177
443	344	7.3	0.0	0.3	0.3	2.4	100	839
444	294	6.4	0.1	0.9	0.4	5.7	129	1,676
445	43	6.0	0.1	0.5	0.4	2.9	15	126
446	1	8.0	0.0	0.0	0.0	0.0	0	0
447	135	3.4	0.1	1.0	0.3	3.3	39	450
448	0	0.0	0.0	0.0	0.0	0.0	0	0
449	1,957	6.0	0.1	0.9	0.5	5.2	881	10,196
450	357	3.4	0.1	0.8	0.4	2.7	129	978
451	1	6.0	0.0	1.2	0.0	7.0	0	7
452	1,471	6.4	0.1	0.8	0.5	4.9	765	7,149
453	268	4.3	0.1	0.6	0.2	2.6	59	708
454	285	5.8	0.1	0.9	0.4	5.2	114	1,479
455	22	5.7	0.0	0.6	0.1	3.6	1	78
456	4	4.3	0.3	1.3	1.3	5.5	5	22
457	18	17.0	0.1	0.3	1.8	5.6	33	100
458	88	21.5	0.1	0.5	1.4	10.4	122	918
459	65	14.8	0.0	0.5	0.7	7.4	43	482
460	125	10.2	0.0	0.6	0.4	6.0	53	749
461	612	7.9	0.1	0.5	0.4	3.6	257	2,228
462	2,167	22.3	0.0	0.6	0.8	13.7	1,669	29,731
463	505	7.2	0.1	0.9	0.5	6.3	253	3,182
464	243	5.5	0.1	0.8	0.4	4.7	90	1,142
465	71	3.0	0.1	0.9	0.2	2.7	15	193
466	254	7.5	0.0	0.3	0.2	2.3	46	587
467	408	9.9	0.0	0.3	0.3	2.6	102	1,057
468	7,151	15.3	0.1	0.7	1.3	10.5	9,225	75,300
469	0	0.0	0.0	0.0	0.0	0.0	0	0
470	5	18.8	0.0	0.9	0.4	17.6	2	88
471	112	19.0	0.0	0.3	0.8	5.1	88	567
472	6	30.3	0.0	0.4	1.0	11.8	6	71
473	96	14.6	0.1	0.7	1.5	10.5	141	1,008
		8.6	0.1	0.7	0.6	6.2		

Source: 1986 BMAD 5% Beneficiary File.

APPENDIX A-2

DISTRIBUTION OF CONSULTS BY CARRIER FOR SELECTED LOCATIONS

	Percent Office	Percent Inpatient	Percent Hospital Ambulatory
Alabama	8.9%	89.3%	1.7%
Alaska	25.2	74.0	0.8
Arizona	38.7	59.7	1.5
Arkasas	8.4	88.8	2.7
California (Northern)	43.0	53.4	3.6
California (Southern)	26.0	72.2	1.8
Colorado	26.2	68.5	5.3
Connecticut	30.5	66.1	3.4
Delaware	8.4	88.9	2.7
District of Columbia	27.4	70.9	1.7
Florida	23.1	74.6	2.4
Georgia	16.0	80.5	3.5
Hawaii	32.8	64.7	2.6
Idaho	53.3	46.0	0.7
Illinois	12.8	82.6	4.6
Indiana	21.1	71.8	7.1
Iowa	26.9	64.7	8.4
Kansas City	11.3	82.9	5.8
Kansas (except Kansas City)	28.7	65.0	6.3
Kentucky	14.4	83.1	2.5
Louisiana	14.6	82.1	3.3
Maine	25.2	60.3	14.5
Maryland	11.5	86.9	1.6
Massachusetts	18.8	76.7	4.5
Michigan	18.5	76.1	5.5
Minnesota (rural)	28.6	56.7	14.7
Minnesota (urban)	20.8	68.6	10.6
Mississippi	12.5	85.9	1.7
Missouri (except Kansas City)	11.3	85.2	3.6
Montana	34.2	62.4	3.4
Nebraska	30.0	63.8	6.2
Nevada	29.2	69.6	1.2

APPENDIX A-2 (continued)

DISTRIBUTION OF CONSULTS BY CARRIER FOR SELECTED LOCATIONS

	Percent Office	Percent Inpatient	Percent Hospital Ambulatory
New Hampshire & Vermont	29.3%	66.8%	3.9%
New Jersey	17.1	81.1	1.7
New Mexico	18.3	76.7	5.0
New York (Western and Upstate)	28.7	67.9	3.4
North Carolina	17.5	79.1	3.5
North & South Dakota	23.4	74.0	2.5
Ohio	17.7	78.7	3.7
Oklahoma	12.9	83.2	3.9
Oregon	49.0	47.4	3.6
Pennsylvania	8.0	89.0	2.9
Rhode Island	18.2	81.2	0.6
South Carolina	13.7	82.5	3.8
Tennessee	9.5	88.1	2.5
Texas	20.4	74.7	4.9
Travelers (RR)	17.6	79.0	3.3
Utah	37.5	60.5	1.9
Virginia	15.4	83.1	1.5
Washington (State)	53.4	44.1	2.5
West Virginia	13.8	84.2	2.0
Wyoming	23.3	73.7	3.0

Source: 1986 BMAD 5% Beneficiary File.

APPENDIX A-3

UTILIZATION OF PHYSICIAN CONSULTS AND VISITS (PER 1,000 BENEFICIARIES) BY CARRIER AND LOCATION

Carrier	Hospital Consult Rate	Office Consult Rate	OPD & ASF Consult Rate	Hospital Visit Rate	Office Visit Rate
NATIONAL RATES	274	73	12	2,488	3,778
Alabama	235	23	5	3,219	3,744
Alaska	214	73	2	2,252	3,001
Arizona	183	119	5	2,076	3,619
Arkasas	170	16	5	3,021	4,054
California (Northern)	144	116	10	1,883	3,854
California (Southern)	515	185	13	2,636	4,708
Colorado	168	64	13	2,217	3,210
Connecticut	211	97	11	2,165	3,397
Delaware	546	51	17	2,632	3,358
District of Columbia	427	165	10	3,775	4,292
Florida	338	105	11	395	3,401
Georgia	248	49	11	3,056	3,477
Hawaii	142	72	6	1,836	4,871
Idaho	80	93	1	1,475	3,480
Illinois	254	39	14	3,216	2,707
Indiana	149	44	15	2,260	3,064
Iowa	132	55	17	2,101	3,367
Kansas City (Missouri/Kansas)	272	37	19	3,259	3,460
Kansas (except Kansas City)	105	46	10	2,004	3,621
Kentucky	229	40	7	2,991	3,133
Louisiana	260	46	11	3,421	2,997
Maine	197	82	47	2,214	3,407
Maryland	742	98	14	2,587	3,186
Massachusetts	392	96	23	2,824	3,167
Michigan	260	63	19	2,541	3,654
Minnesota (rural)	49	25	13	1,163	2,414
Minnesota (urban)	194	59	30	1,688	1,834
Mississippi	282	41	5	3,206	3,501
Missouri (except Kansas City)	310	41	13	3,441	3,850
Montana	100	55	6	1,788	2,749
Nebraska	114	54	11	2,244	2,975
Nevada	219	92	4	2,155	3,450
New Hampshire/Vermont	183	80	11	2,194	3,570
New Jersey	361	76	8	3,076	3,432

APPENDIX A-3 (continued)

UTILIZATION OF PHYSICIAN CONSULTS AND VISITS (PER 1,000 BENEFICIARIES) BY CARRIER AND LOCATION

Carrier	Hospital Consult Rate	Office Consult Rate	OPD & ASF Consult Rate	Hospital Visit Rate	Office Visit Rate
New Mexico	182	43	12	1,915	2,904
New York (Western)	210	89	11	2,868	3,168
North Carolina	209	46	9	2,127	3,334
North & South Dakota	195	62	7	2,532	3,649
Ohio	245	55	11	2,864	3,404
Oklahoma	149	23	7	2,483	3,266
Oregon	106	110	8	1,394	3,473
Pennsylvania	545	49	18	3,545	4,239
Rhode Island	289	65	2	3,949	4,399
South Carolina	112	19	5	1,906	2,769
Tennessee	269	29	8	3,299	3,299
Texas	248	68	16	2,308	3,297
Utah	134	83	4	1,239	2,994
Virginia	236	44	4	2,990	3,362
Washington (State)	111	135	6	1,636	3,654
West Virginia	265	44	6	2,365	2,809
Wyoming	89	28	4	1,750	2,401
NATIONAL RATES	274	73	12	2,488	3,778

Source: 1986 BMAD 5% Beneficiary File.

APPENDIX A-4

MEAN REIMBURSEMENT FOR CONSULTATIONS BY CONSULT CODE, PHYSICIAN SPECIALTY, AND LOCATION

Specialty	Initial Limited	Initial Inter-mediate	Initial Extensive	Initial Compre-hensive	Initial Complex	Follow-Up Brief	Follow-Up Limited	Follow-Up Inter-mediate	Follow-Up Extended	Confirm-atory (All Levels)
I. Physicians' Offices										
General and Family Practice	$24.48	$36.02	$50.75	$77.63	$ 94.19	$18.97	$27.06	$26.31	$42.09	$39.29
General Surgery	38.23	43.64	54.66	74.11	97.86	19.18	27.12	27.84	38.28	47.04
Cardiology	47.78	60.34	71.23	94.64	126.71	21.79	27.08	34.68	42.66	79.11
Dermatology	37.88	46.03	49.81	71.41	95.72	17.45	20.19	38.31	38.89	0.00
Gastroenterology	46.62	57.19	67.38	91.70	133.16	20.76	25.89	32.65	44.56	61.15
Internal Medicine	43.59	53.40	68.89	91.59	118.84	21.20	30.55	34.08	53.94	57.69
Neurology	46.04	59.97	72.21	92.74	121.40	22.53	27.37	32.16	44.20	89.74
Neurosurgery	52.27	59.86	64.76	82.34	111.98	21.98	25.59	34.03	40.14	88.00
Ophthalmology	41.07	48.79	53.96	74.72	97.56	21.30	25.03	38.79	40.44	49.05
Orthopedic Surgery	43.02	47.75	60.00	78.53	107.11	17.13	29.20	33.53	41.11	54.46
Physical Med/Rehabilitation	49.37	49.15	62.62	85.52	100.66	29.52	34.36	33.12	48.81	0.00
Psychiatry	36.82	66.82	60.80	81.46	124.15	21.46	32.67	28.55	44.03	0.00
Pulmonary Disease	55.48	55.21	70.18	101.62	129.36	22.50	27.91	37.71	53.08	0.00
Thoracic Surgery	45.55	50.00	64.69	82.55	118.81	18.13	50.00	25.68	45.43	43.50
Urology	39.22	46.66	58.74	75.99	111.63	22.31	22.79	31.30	53.03	48.24
Nephrology	58.10	61.92	76.85	94.53	121.28	0.00	32.00	29.98	50.40	0.00
Group Practice	42.70	47.89	67.57	89.89	118.06	19.80	28.12	41.38	61.72	45.09
Ear, Nose & Throat	38.57	44.93	50.14	70.84	117.48	18.73	22.34	24.58	41.00	38.86
Radiology	40.68	45.71	62.68	83.25	90.17	18.77	19.69	22.44	42.14	39.00

APPENDIX A-4 (continued)

MEAN REIMBURSEMENT FOR CONSULTATIONS BY CONSULT CODE, PHYSICIAN SPECIALTY, AND LOCATION

Specialty	Initial Limited	Initial Inter- mediate	Initial Extensive	Initial Compre- hensive	Initial Complex	Follow- Up Brief	Follow- Up Limited	Follow-Up Inter- mediate	Follow-Up Extended	Confirm- atory (All Levels)
II. Hospital Inpatient										
General and Family Practice	$33.16	$43.50	$53.55	$69.45	$ 98.84	$17.97	$25.11	$27.89	$46.38	$49.78
General Surgery	42.62	47.34	57.55	74.80	90.97	17.96	21.75	29.08	36.04	49.00
Cardiology	55.61	59.58	73.86	90.71	114.14	21.54	26.48	30.69	47.44	60.45
Dermatology	41.15	47.18	54.49	67.91	88.94	18.68	26.65	25.07	50.02	42.65
Gastroenterology	52.99	58.39	70.75	89.00	119.85	21.66	26.08	33.52	47.92	49.48
Internal Medicine	48.09	52.75	67.32	86.29	108.87	21.46	25.97	33.18	50.79	58.63
Neurology	51.65	60.30	76.63	91.80	112.04	21.80	25.81	30.48	45.16	92.07
Neurosurgery	50.53	62.15	73.42	79.60	107.33	19.59	25.43	29.41	41.42	99.10
Ophthalmology	39.87	45.40	57.50	72.48	94.29	22.17	24.80	32.93	42.17	41.00
Orthopedic Surgery	42.92	49.34	57.92	71.28	100.66	20.06	22.31	28.09	43.86	59.23
Physical Med/Rehabilitation	40.28	49.81	62.99	80.29	108.75	18.85	24.78	31.87	34.37	72.40
Psychiatry	49.37	51.72	68.35	86.29	103.70	24.22	26.51	32.74	50.51	78.00
Pulmonary Disease	50.06	62.36	75.18	94.12	123.93	21.85	24.89	38.71	52.96	100.73
Thoracic Surgery	48.71	52.11	62.00	78.15	102.53	19.52	22.98	27.57	49.87	82.32
Urology	43.05	47.74	58.03	72.20	97.83	18.56	24.07	29.52	49.07	42.96
Nephrology	47.40	64.39	76.13	93.41	123.79	24.79	26.68	31.23	55.52	93.00
Group Practice	41.11	48.32	62.86	81.13	110.36	25.70	29.66	38.47	50.26	67.38
Ear, Nose & Throat	43.34	45.60	55.83	68.27	99.35	17.20	23.69	30.91	46.31	70.20
Radiology	41.21	49.25	58.32	79.14	91.15	22.84	20.45	24.97	44.03	46.60

APPENDIX A-4 (continued)

MEAN REIMBURSEMENT FOR CONSULTATIONS BY CONSULT CODE, PHYSICIAN SPECIALTY, AND LOCATION

Specialty	Initial Limited	Initial Inter-mediate	Initial Extensive	Initial Compre-hensive	Initial Complex	Follow-Up Brief	Follow-Up Limited	Follow-Up Inter-mediate	Follow-Up Extended	Confirm-atory (All Levels)
III. Hospital Outpatient and Abulatory Surgical Facilities										
General and Family Practice	$28.33	$49.46	$57.04	$67.91	$ 82.26	$22.28	$18.12	$17.07	$26.23	$ 0.00
General Surgery	34.59	42.27	50.27	61.35	76.26	10.48	21.37	21.48	25.81	0.00
Cardiology	32.26	47.34	50.78	74.19	100.10	6.87	21.52	23.73	20.72	120.00
Dermatology	32.93	41.92	47.65	73.25	150.00	18.17	12.80	30.15	0.00	0.00
Gastroenterology	43.14	25.19	57.33	75.89	90.68	19.25	25.00	32.69	35.52	50.00
Internal Medicine	35.67	51.49	58.34	67.47	95.04	17.18	21.43	26.47	30.45	60.00
Neurology	37.18	54.38	64.86	77.14	96.29	27.33	28.67	32.10	45.45	130.00
Neurosurgery	40.83	62.50	43.00	63.43	76.07	0.00	21.30	30.00	50.00	0.00
Ophthalmology	37.38	37.88	56.36	63.00	96.04	10.87	18.70	25.80	0.00	0.00
Orthopedic Surgery	35.48	42.36	51.92	59.56	103.07	17.25	14.20	0.00	39.48	38.00
Physical Med/Rehabilitation	35.21	42.59	45.52	59.69	92.50	17.89	15.42	15.80	27.66	0.00
Psychiatry	27.57	0.00	60.26	55.27	70.74	16.80	6.75	6.38	11.46	0.00
Pulmonary Disease	42.97	44.14	59.53	69.67	89.32	25.37	20.06	25.13	0.00	43.30
Thoracic Surgery	33.67	45.44	55.36	69.31	77.78	0.00	25.00	13.80	36.95	0.00
Urology	30.52	38.81	45.15	61.49	67.03	16.30	24.80	21.42	0.00	0.00
Nephrology	26.49	0.00	49.20	72.98	81.25	0.00	12.85	23.45	0.00	0.00
Group Practice	33.79	37.21	55.24	59.78	101.39	21.24	25.60	32.36	39.57	60.75
Ear, Nose & Throat	33.22	38.08	52.50	63.99	100.63	21.90	0.00	20.60	0.00	0.00
Radiology	33.64	42.77	54.76	65.95	85.45	15.77	16.09	17.52	23.59	0.00

Source: 1986 BMAD 5% Beneficiary File.

CMS LIBRARY
3 8095 00012786 6